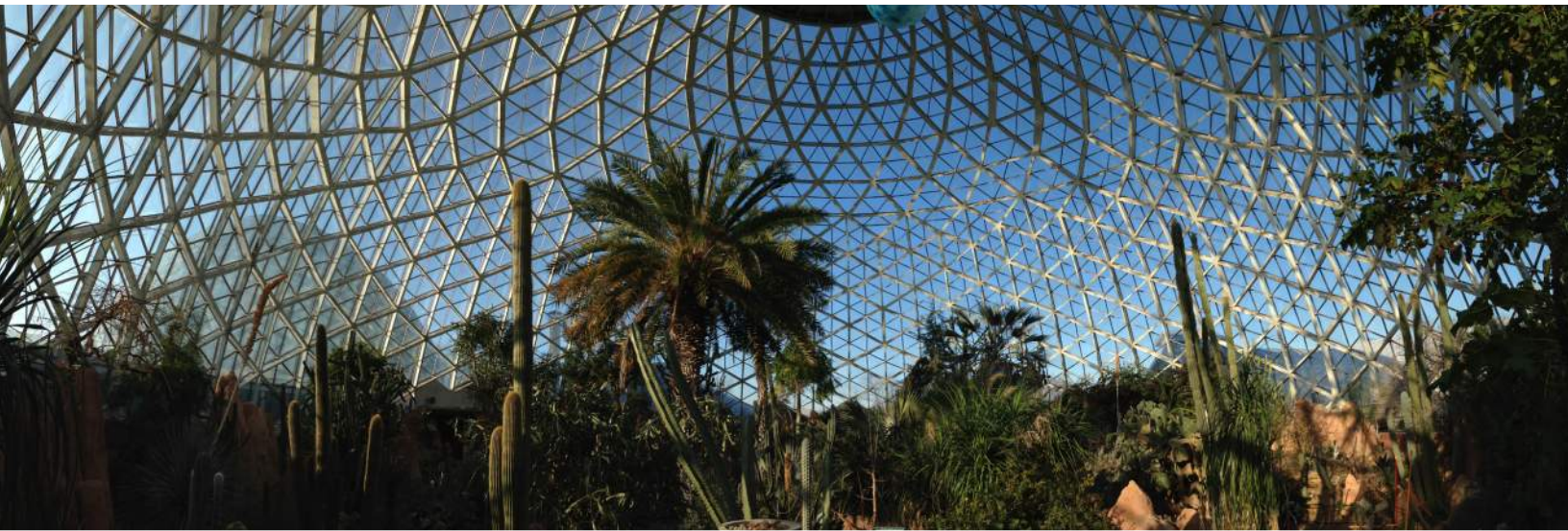




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GRAEF Project No.: 2013-0167



Tropical, Desert, and Show Dome Inspection Report

Mitchell Park Horticultural
Conservatory
524 S. Layton Blvd.
Milwaukee, Wisconsin

January 9, 2015

prepared for
Architecture, Engineering & Environmental Services
Milwaukee County City Campus
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Executive Summary

The Milwaukee County Parks staff has found concrete debris on the ground of the domes, including on the paths used by visitors. In order to determine the source of the concrete and to explore solutions to this issue, the structural elements of the Mitchell Park Domes were inspected up close from aerial lifts. The inspectors visually reviewed the structure and used hammers to listen for and remove loose concrete. A partial inspection of each dome was performed in 2013; full inspections of each dome were performed in December 2013 through August 2014.

The domes are composed of two primary systems: the reinforced concrete structural frame and the glass and metal glazing system. The structural frame is composed of precast concrete units that are welded to plates at their joints. The glazing system sits outside of the concrete frame and is connected to the concrete with steel plates, tubes and hubs. The hubs were also designed to collect and drain condensation water.

The focus of the inspections was the condition of the concrete structure, particularly where it interacts with the glazing system. The vast majority of the concrete debris originated from these locations. Moisture from humidity, leaks in the glazing system, and drips from clogged glazing hubs has begun to corrode the steel plates embedded in the concrete where the glazing system attaches to the structure. Light corrosion at these plates puts pressure on the concrete, causing pieces to fall to the ground. During this project, inspectors knocked off loose and cracked concrete off these locations. The plates were then painted with a zinc primer to slow additional corrosion.

The following are some of the less commonly observed issues observed through the concrete frame and corresponding repairs. Misaligned embedded plates and glazing connections were reinforced with stainless steel clamps. Eroded or deteriorated grout joints between the precast members were hammer tapped and loose grout was removed. Where spalled concrete exposed steel reinforcing bars, either the rebar was painted with a zinc primer (in areas of small spalls) or the concrete was patched (in areas of structurally significant spalls). Where the concrete was being eroded or steel connections were being saturated by water drips from the glazing system, plastic gutter-type pieces were installed to redirect the water off the structural frame.

During the course of the inspections, the connections of the aluminum framing cap and the concrete structure at the top of each dome were also inspected. Deteriorated and broken nuts were found in some of the connections between aluminum framing members. The nuts and bolts were replaced in that connection at all locations in all three domes.

The repairs performed during this project primarily addressed immediate falling hazards that were present at the time of the inspections. Concrete will continue to fall as more deterioration occurs. It is not possible to reasonably determine when this will happen due to the number of factors involved, but it is certain to happen at some point. The repairs performed during this project do not constitute final repairs or a long-term maintenance plan for the structures.

Long term preservation plans for the domes should consider repairing or replacing the glazing system, cleaning and repainting the concrete structure, and performing routine inspections (every two to three years) of the structure to monitor the progression of deterioration.

Because the majority of the water causing damage is coming from the glazing system, it is imperative that the glazing system be addressed if the buildings are to remain in operation and in a safe condition for the staff and visiting public.

Objectives

The 2013-2014 Dome Inspection program aimed to:

- 1) Identify the source of falling concrete debris,
- 2) Remove loose concrete debris that appeared to present imminent falling hazards,
- 3) Document existing conditions of the reinforced concrete structure, and
- 4) Recommend minimally invasive repairs to attempt to reduce the frequency of future falling hazards.

Project Impetus

Milwaukee County Parks staff reported concrete debris ranging in size from coin to golf ball proportions found on the ground of the dome, including paved paths frequented by public patrons. This prompted the need for a visual inspection of the reinforced concrete structure – the suspected source of fallen debris – to be conducted within arm's reach of inspectors. At this distance, inspectors can see cracks and use the sounds of hammer tapping to help identify delaminated, or loose, concrete. Being within reach of the structure, furthermore, enables the inspectors to remove pieces of concrete deemed to be falling hazards.

Means of Inspection

In the 50-year history of the dome, inspections of metal hubs that are part of the exterior glazing system and their connections to the supporting reinforced concrete frame have been mostly conducted from afar. The heights of the dome and space constraints at the ground level limit the reach of conventional boom lifts in the Tropical and Desert Domes. Inspection, therefore, was conducted in two phases.

An electrically powered telescoping aerial boom lift, with 40-foot reach, provided access to lower portions of the Tropical Dome structure and a few portions of the Desert and Show Domes. This 40-foot lift traveled along the paved garden paths. This lift was used to perform the initial inspection of certain areas of the domes to determine the extent and type of concrete damage.

The majority of the Tropical and Desert Dome structures was accessed using an electrically powered aerial lift with 105-foot reach. This lift was used to inspect and repair all areas of the concrete frame. The Show Dome structure was inspected and repaired using a combination of aerial boom lifts with 40 and 125-foot reaches.

In its most compact configuration, the aerial lift is narrow and low enough to fit through the lobby doors of the Tropical and Desert Domes. To provide reach within the dome, outrigger legs must unfold and distribute loads over a wide stance to stabilize the telescoping boom. In this unfolded configuration, the feet that support the lift often must step off of the paved path. Geotechnical engineers tested soils at each of these locations, and County Parks staff made improvements by replacing organic soils with compacted gravel capable of supporting the bearing points of the machine. For details of the lift positions that were used within the domes and the geotechnical reports for those locations, see *Appendix B*. Each of the lift locations

was marked with a nail placed in the path to assist in locating the lift locations for future inspections. If these locations are used in the future, the support conditions of the soil and pavement should be evaluated at that time by a competent party due to changes in conditions since this inspection.

In the Show Dome, the 125-foot aerial boom lift was placed near the center of the dome. Bearing pads were placed below the wheels to distribute the lift loads to an acceptable pressure as shown in *Appendix A*. The 125-foot lift could reach all areas of the dome not obstructed by trees. The 40-foot lift had an articulating boom and was primarily used to access areas behind trees.

Dates of Inspection

Phase I was performed August 26 through 30, 2013 using the 40-foot JLG Aerial Boom Lift in all three domes.

Phase II was performed in the Tropical Dome from December 6, 2013 through January 21, 2014 using the 105-foot ReachMaster FS 105 Atrium Boom Lift.

Phase II was performed in the Desert Dome from February 22, 2014 through March 7, 2014 using the 105-foot ReachMaster FS 105 Atrium Boom Lift.

Phase II was performed in the Show Dome from July 28, 2014 through August 22, 2014 using the 125-foot Genie S-125 Aerial Boom Lift and a 40-foot JLG Aerial Boom Lift.

Details of Existing Construction

Construction of the dome dates back to the early 1960's. The dome is made of 2 primary systems:

- 1) Structure: reinforced concrete space frame, and
- 2) Glazing: wire-reinforced glass within a metal lattice.

The interior reinforced concrete space frame is made of 25 repetitive sectors. Each sector of the structure includes 11 precast concrete units linked at joints by welding rebar and plates and grouting voids. The precast units were made on site and lifted into place by crane, around a temporary cylindrical steel scaffold, or falsework, that offered support during the erection process.

The exterior glazing system is supported on the concrete structure with stainless steel pipes. The bases of the pipes are welded to carbon steel plates embedded within the precast concrete. The head of each pipe threads into an aluminum hub that serves to connect multiple members of the aluminum lattice framing the glazing panels. By design, the hubs also collect and distribute condensation from the glazing system for drainage. For additional details of construction, see *Appendix C*.

Inspection Scope

Based on the main construction features, the inspection was divided and organized into 25 sectors of the dome, with 59 to 68 hubs per sector where the glazing system and structure interact. Overall, inspectors assessed the conditions of:

- 1) The locations where concrete structure and hub post bases interact,
- 2) The precast, reinforced concrete units that make up the space frame,
- 3) The grouted joints between precast units, and
- 4) The bolted metal beam connections near the top compression ring of the dome.

Findings of Inspection

Water wets the dome structure from several different sources, including:

- 1) Atmospheric humidity, resulting from watering plants and evaporation within the greenhouse,
- 2) Leaks from holes in the wire-reinforced glass and surrounding gaskets of the glazing system, and
- 3) Clogged metal hubs that overflow with drips.

A significant amount of water enters from leaks in the exterior glazing. Among the sources of water infiltration, the metal hubs seem to leak most consistently, even on sunny days. The hubs, by design, collect condensation from the glazing for drainage, but when the drains are clogged or the seals are deteriorated, the water drips directly onto the space frame and into the interior space.

Corrosion of embedded steel connection plates appears to be the main consequence of this moisture. These steel plates attach the metal stand pipes of the glazing system to the reinforced concrete space frame. The plates measure 3 inches square and are typically embedded within precast reinforced concrete units that measure either 4 or 6 inches in width. Inspectors noted the majority of loose or delaminated concrete occurring between the edges of plates and the edge of the concrete unit embedded within 4-inch wide concrete units, with many delaminations also occurring in 6-inch wide units. The concrete was not generally spalling when the edge of the plate was not near the edge of the concrete unit. The embedded steel plate, therefore, makes all narrow precast units susceptible to spalling as a result of corrosion. The narrowest concrete units tend to spall first.

The thin pieces of concrete on the sides of the plates are very susceptible to spalling. Concrete shrinks as it cures, causing the concrete to crack at its weakest points. This detail of thin sections of concrete with reentrant corners next to the plates is the weakest area of concrete. In many locations, it is likely that the concrete weakened in these areas during curing. Then, though these plates exhibit only freckled surface rust, the expansion caused by light corrosion generates enough force to spall the concrete that conceals the sides of the embedded plates. The weakened planes also allow for some areas to spall even without the

presence of rust. Other explanations for spalling are possible; however this reason was the most consistent account.

Spalled and delaminated concrete around embedded plates prevails throughout the structure. Less commonly observed deficiencies in the reinforced concrete space frame include:

- 1) Misaligned embed plate to glazing standoff pipe connections,
- 2) Eroded or deteriorated grout joints between precast units,
- 3) Spalled concrete exposing steel reinforcing bars, and
- 4) Local erosion of concrete impacted by water drips.

Above the reinforced concrete precast space frame, aluminum framing forms the apex of the dome. The apex bears on metal brackets welded to plates embedded in the reinforced concrete compression ring of the space frame. Inspectors found broken or absent aluminum nuts in the bolted hanger connections of aluminum I-beams. The bolt hardware appeared to be continuously wet.

For comprehensive notes of the inspection findings, see *Appendix D*.

Appendix F contains photos of the common conditions described in this section.

Remediation/Repair

Because the goal of this inspection was to address imminent falling hazards, inspectors knocked off only pieces of delaminated concrete deemed to be loose. Typically, these pieces were hollow sounding with visual evidence of cracks forming. Each spall location was documented and flagged with a colored ribbon. At the end of each inspection shift, the aerial lift was turned over to the contractor for conducting repairs. Most commonly, the contractor coated spalled concrete and exposed surfaces of rusted embed plates with a zinc-rich paint, at each of the flagged locations.

Other repairs include:

- 1) Clamping stainless steel glazing standoff pipes to the structure where misalignment caused disconnections,
- 2) Re-grouting sections of eroded or missing grout,
- 3) Painting exposed steel reinforcing bars coated with rust,
- 4) Installation of custom plastic gutters to divert dripping water away from the structure, and
- 5) Replacing all aluminum nuts and bolts of hanger connections at the apex with stainless steel bolts.

For drawings of common repair details, see *Appendix E*. *Appendix F* shows a photo of a clamp repair at standoff connections that were misaligned at the time of original construction.

Future Work

Repairs conducted during this project primarily addressed immediate falling hazards. Only concrete that was loose at the time of inspection was removed, but hundreds of connections that are susceptible to concrete spalling around embed plates remain in place. As the steel plates corrode more, the concrete at those locations could spall and create a falling hazard. These repairs, therefore, do not constitute final repairs or a long-term maintenance plan.

Inspections and repairs of this project focused primarily on the conditions of the 50-year-old reinforced concrete space frame structure. Exposure to water, in both liquid and vapor form, presents a threat to longevity of the structure. Long-term preservation plans for the domes should, therefore, consider:

- 1) Repairing or replacing the exterior glazing system to reduce leaking water onto the structure,
- 2) Cleaning and re-painting the reinforced concrete structure to impede water penetration, and
- 3) Routine inspections of the structure to monitor the progression of future deterioration.

Failure of the window system to manage moisture creates conditions for corrosion of the structure. If the structure is not kept dry, even extensive repairs to the reinforced concrete will not be effective.

Preservation of the primary concrete space frame structure is still possible, because no significant section loss of steel reinforcing or embedded plates was observed. In most cases, the concrete lost to spalling only functioned as cover for the embed plates. The concrete that creates the structural frame remains intact. Because of the accelerated pace at which wet structures can deteriorate, provisions for future inspections and/or repairs should be made within the next two years. Future inspections, at arm's length, should be conducted at regular intervals, perhaps every 2 to 3 years, until repairs may justify longer periods between inspections.

It is imperative that the moisture issues related to the glazing system at the Domes be addressed if the buildings are to remain in operation and in a safe condition for the staff and visiting public.

Report Limitations

This report is based on conditions of structural elements that were readily observable at the time of investigation. No invasive testing other than described in this report were performed. GRAEF does not accept responsibility for structural deficiencies not evident during an investigation of this type. Conditions observed may change if the conditions within the structure are not addressed.

Appendix A:

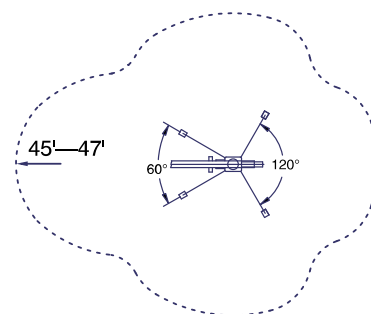
LIFT SETUP

HOW WE MEASURE UP

REACH-MASTER FS-105 SPECIFICATIONS

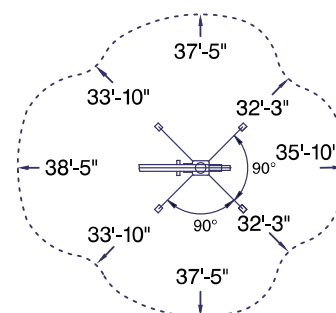
Weight:	9127 pounds
Height (Transport Mode):	6'-6"
Length / Width (Min.-Max.):	24 feet / 32"-56"
Maximum Outreach (Varies, see outrigger layout):	45—47 feet
Maximum ground pressure under 1 wheel:	134 psi
Maximum ground pressure under 1 outrigger plate:	41.2 psi
Maximum load on any 1 outrigger:	4945 pounds

Outrigger Layout (Optimized)

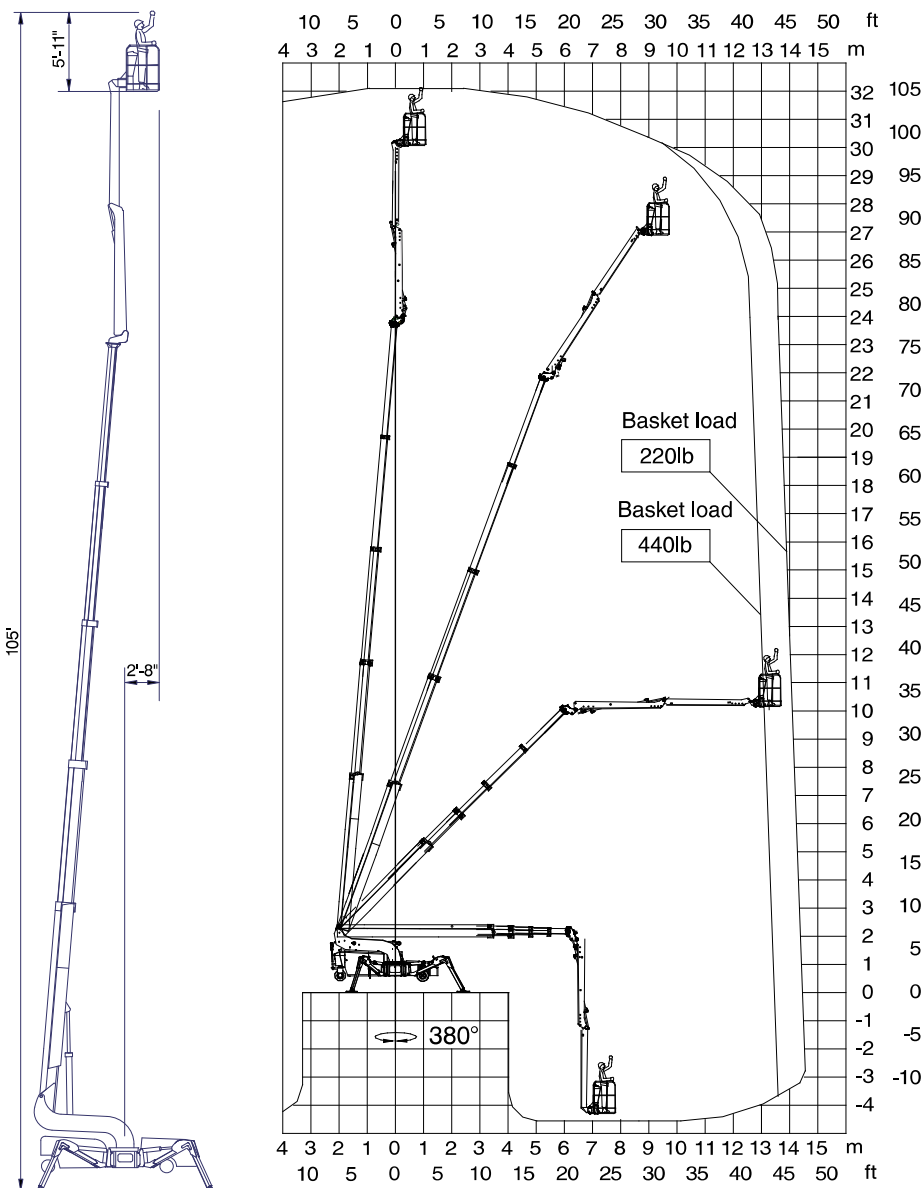
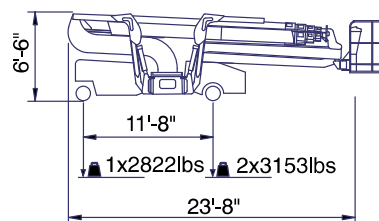
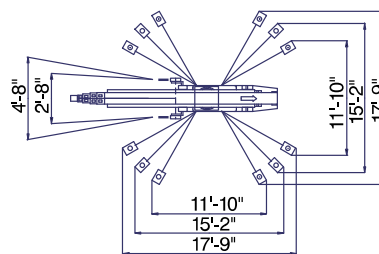


Basket load = 220lb

Outrigger Layout (Standard)



Basket load = 440lb



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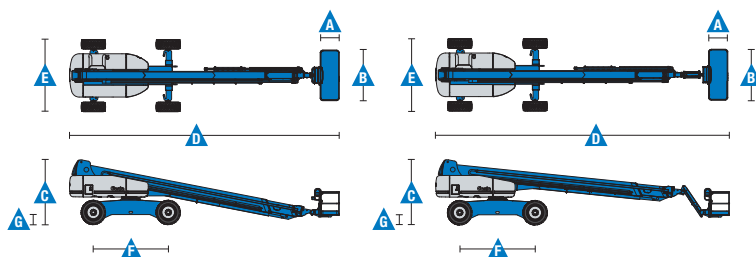
Call us for
more information
or to arrange
for an ON-SITE
EVALUATION.

Specifications

Models	S™ -120		S™ -125	
Measurements	US	Metric	US	Metric
Working height maximum*	126 ft	38.58 m	131 ft 2 in	40.15 m
Platform height maximum	120 ft	36.58 m	125 ft 2 in	38.15 m
Horizontal reach maximum	75 ft	22.86 m	80 ft	24.38 m
Below ground reach	6 ft 6 in	1.98 m	10 ft 9 in	3.27 m
A Platform length - 8 ft model	3 ft	0.91 m	3 ft	0.91 m
Platform length - 6 ft model	2 ft 6 in	0.76 m	2 ft 6 in	0.76 m
B Platform width - 8 ft model	8 ft	2.44 m	8 ft	2.44 m
Platform width - 6 ft model	6 ft	1.83 m	6 ft	1.83 m
C Height - stowed	10 ft 1 in	3.07 m	10 ft 1 in	3.07 m
D Length - stowed	42 ft 8 in	13.00 m	46 ft 9 in	14.25 m
Length - transport (jib tucked under)	—	—	39 ft 11 in	12.17 m
E Width - axles retracted	8 ft 1 in	2.46 m	8 ft 1 in	2.46 m
Width - axles extended	11 ft 1 in	3.38 m	11 ft 1 in	3.38 m
F Wheelbase	12 ft	3.66 m	12 ft	3.66 m
G Ground clearance - center	1 ft 5 in	0.38 m	1 ft 5.5 in	0.38 m
Productivity				
Lift capacity	750 lbs	340 kg	500 lbs	227 kg
Platform rotation	160°		160°	
Vertical jib rotation	—		135°	
Turntable rotation	360° continuous		360° continuous	
Turntable tailswing - axle retracted	5 ft 6 in	1.68 m	5 ft 6 in	1.68 m
Turntable tailswing - axle extended	4 ft 1 in	1.24 m	4 ft 1 in	1.24 m
Drive speed - stowed	3.0 mph	4.8 km/h	3.0 mph	4.8 km/h
Drive speed - raised below 80 ft	0.68 mph	1.1 km/h	0.68 mph	1.1 km/h
Drive speed - raised above 80 ft	0.34 mph	.55 km/h	0.34 mph	.55 km/h
Gradeability - stowed**	40%		40%	
Turning radius - axle retracted: inside	13 ft 2 in	4.01 m	13 ft 2 in	4.01 m
Turning radius - axle retracted: outside	22 ft 2 in	6.75 m	22 ft 2 in	6.75 m
Turning radius - axle extended: inside	8 ft 6 in	2.59 m	8 ft 6 in	2.59 m
Turning radius - axle extended: outside	18 ft 10 in	5.74 m	18 ft 10 in	5.74 m
Controls	12 V DC proportional		12 V DC proportional	
Tires - RT lug	445/65 D22.5		445/65 D22.5	
Power				
Power source	Deutz TD 2011 L04i 4-cylinder turbo diesel, 74 hp (55 kW) Perkins 804D-33T 4-cylinder turbo diesel, 74 hp (55 kW)			
Auxiliary power unit	12 V DC		12 V DC	
Hydraulic tank capacity	55 gal	208 L	55 gal	208 L
Fuel tank capacity	40 gal	151 L	40 gal	151 L
Weight***				
4WD	44,340 lbs	20,112 kg	44,640 lbs	20,248 kg

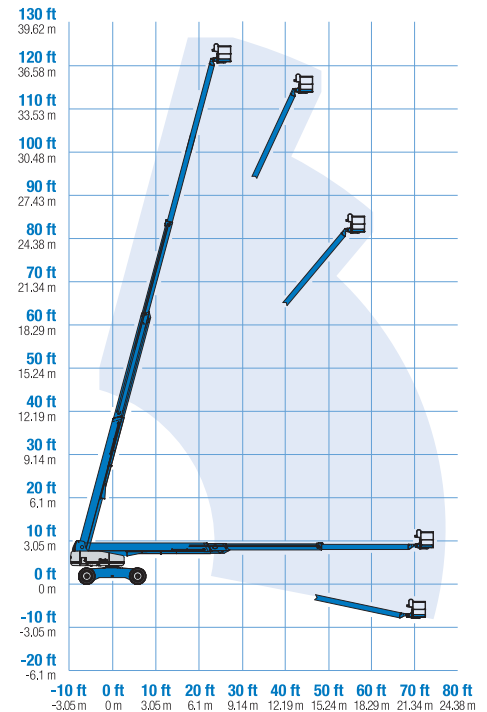
Standards Compliance

ANSI A92.5, CSA B354.4, EN 280, AS 1418.10

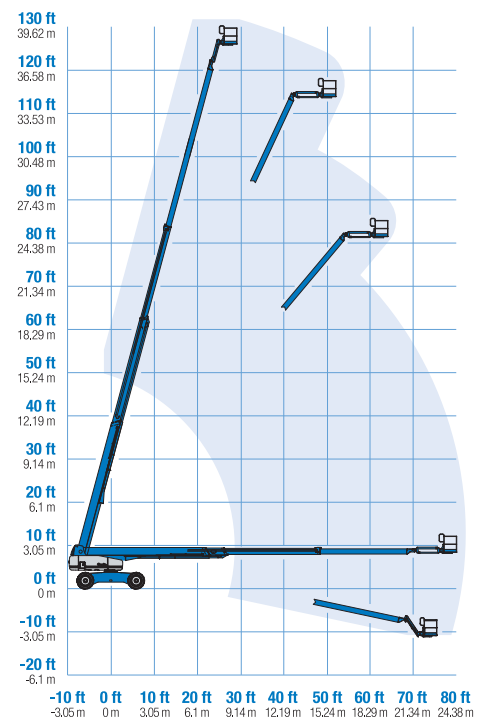


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Range Of Motion S™ -120



Range Of Motion S™ -125



* The metric equivalent of working height adds 2 m to platform height. U.S. adds 6 ft to platform height.

** Gradeability applies to driving on slopes. See operator's manual for details regarding slope ratings.

*** Weight will vary depending on options and/or country standards.

Features

Standard Features

Measurements

S™-120

- 126 ft (38.58 m) working height
- 75 ft (22.86 m) horizontal reach
- 750 lb (340 kg) lift capacity

S™-125

- 131 ft 2 in (40.15 m) working height
- 80 ft (24.38 m) horizontal reach
- 500 lb (227 kg) lift capacity

Productivity

- Self-leveling platform
- 160° hydraulic platform rotation
- Proportional joystick controls
- Hydraulic oil cooler
- Drive enable
- AC power cord to the platform
- Horn
- Hour meter
- Tilt alarm
- Descent alarm
- 360° continuous turntable rotation
- Positive traction 4WD
- Two speed wheel motors
- Four wheel high angle steer
- Four steering modes: front, rear, crab and coordinated
- Four wheel brakes
- Configurable controls to limit lift height to 91 ft (27.74 m)
- On board full diagnostics and engine monitoring display
- Configurable controls to limit lift height to 80 ft (24.38 m)
- Platform work lights
- Lockable platform control box cover

Power

- 12 V DC auxiliary power
- Anti-restart engine protection
- Auto engine fault shutdown
- Swing out engine tray
- Welder ready 12.5 kW AC generator

Easily Configured To Meet Your Needs

Platform Options

- Steel 8 ft (2.44 m) (standard)
- Steel 6 ft (1.83 m)
- Steel 8 ft (2.44 m) tri-entry

Jib Options

- Non-jib (S-100 only)
- 5 ft (1.52 m) jib boom (S-105 only)

Engine Options

- 74 hp (55 kW) Deutz diesel Tier 4i (Standard)
- 74 hp (55 kW) Perkins diesel Tier 4i

Drive/Steer

- 4WD (standard)
- 4WS (standard)

Axle

- Extendable axles (standard)

Tire

- Rough terrain foam-filled (standard)

Options & Accessories

Productivity Options

- Half-mesh platform inserts with swing gate
- Platform top auxiliary rail
- Welder package
- Deluxe hostile environment kit
- Thumb rocker steer
- Tool tray
- Light package
- Entry toe boards
- Pipe cradle (pair)
- Panel cradle package
- Operator protective structure

Power Options

- Cold weather kit
- Diesel scrubber/catalytic muffler
- Intake air pre-cleaner



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Toll Free in USA/Canada +1 (800)-536-1800
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Model E Series

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Inward Self-Closing Swing Gate
180 Degree Hydraulic Platform Rotator
110V-AC Receptacle on Platform
5 Degree Tilt Alarm/Indicator Light
Hourmeter
Battery Condition Indicator
Lifting/Tie Down Lugs
Horn
Operator Tool Tray
All Motion Alarm

Accessories & Options

Platform Worklights
Mesh to Top Rail—Bolt-on Aluminum
Acrylic Console Shield
Cylinder Bellows
UL® EE Rating¹
Flashing Amber Beacon

1. Not available on Multi-Powered models

Please refer to the JLG Aerial Work Platform Sales Manual for additional features and accessories.

Specifications

Reach

Platform Height	
E300AJ/E 300AJP	30 ft (9.14 m)
E400A/E400AJP	40 ft (12.19 m)
E400A Narrow/E400AJP Narrow	40 ft (12.19 m)
E450A/E450AJ	45 ft (13.72 m)
Horizontal Outreach	
E/M400A Narrow	21 ft 2 in. (6.45 m)
E/M450A	23 ft 1 in. (7.04 m)
With Jib	
E300AJ	20 ft (6.1 m)
E/M450AJ	23 ft 9 in. (7.24 m)
With JibPLUS	
E300AJP	20 ft 6 in. (6.25 m)
E/M400AJP Narrow	22 ft 5 in. (6.83 m)
Up and Over Height	
E300AJ/E300AJP	13 ft 1 in. (3.99 m)
E400A/E400AJP	21 ft 6 in. (6.55 m)
E400A Narrow/E400AJP Narrow	21 ft 6 in. (6.55 m)
E450A	24 ft 7 in. (7.49 m)
E450AJ	25 ft 3 in. (7.7 m)
Swing	360 Degrees Non-Continuous
Platform Capacity	500 lb (227 kg)
Platform Rotator	180 Degrees Hydraulic
Jib (range of articulation)	
E300AJ/E300AJP	144 Degrees (+84, -60) Vertical
E400AJP/E400AJP Narrow	144 Degrees (+84, -60) Vertical
E450AJ	141 Degrees (+86, -55) Vertical
JibPLUS	
E300AJP/E400AJP/E400AJP Narrow	180 Degrees Horizontal

(continued on back page)



Versatility to Meet Your Needs

- Choose from three popular platform heights and three chassis widths
- Non-jib and optional jib models
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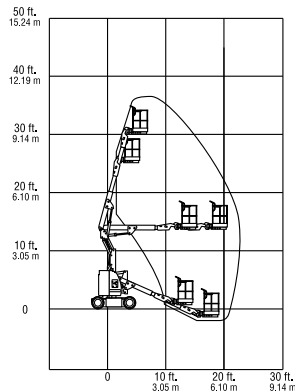
- Industry-leading duty cycles
- Multi-power models provide round-the-clock operation and faster battery charging

Unmatched Reach and Positioning Capabilities

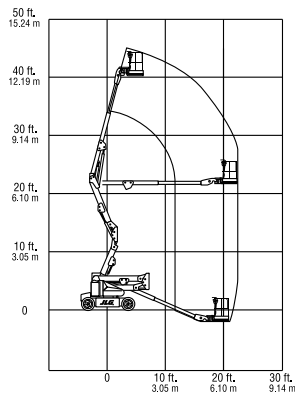
- Exclusive JibPLUS® boom option provides 180-degree range of side-to-side movement
- 48 in. narrow chassis models for narrow aisles
- Near vertical jib positioning and access to areas other machines can't reach
- Multiple function operation for efficient maneuvering in tight spaces

Specifications

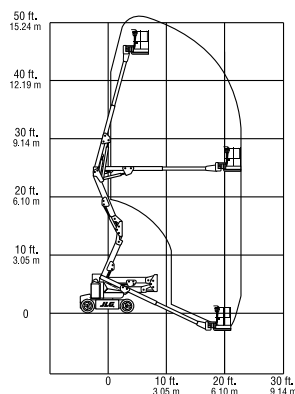
E300



E400



E450



Dimensions

Platform Size	
E300AJ/E300AJP	30 x 48 in. (0.76 x 1.22 m)
E400A Narrow	30 x 48 in. (0.76 x 1.22 m)
E400AJP Narrow	30 x 48 in. (0.76 x 1.22 m)
E400A/E400AJP	30 x 60 in. (0.76 x 1.52 m)
E450A/E450AJ	30 x 60 in. (0.76 x 1.52 m)
Overall Width	
E300AJ/E300AJP	4 ft (1.22 m)
E400A/E400AJP/E450A/E450AJ	5 ft 9 in. (1.75 m)
E400A Narrow/E400AJP Narrow	4 ft 11 in. (1.5 m)
Tailswing	
E300AJ/E300AJP/E400A	Zero
E400AJP/E450A/E450AJ	Zero
E400A Narrow/E400AJP Narrow	4 in. (10 cm)
Stowed Height	
E300AJ/E300AJP/E400A	6 ft 7 in. (2.0 m)
E400AJP/E450AJ	6 ft 7 in. (2.0 m)
E400A Narrow/E400AJP Narrow	6 ft 5.75 in. (1.97 m)
E450A	6 ft 6 in. (1.98 m)
Stowed Length	
E400A/E400AJP/E400A Narrow	18 ft 1 in. (5.5 m)
E400AJP Narrow	18 ft 1 in. (5.5 m)
E450A	19 ft 1 in. (5.82 m)
With Jib	
E300AJ	18 ft (5.49 m)
E450AJ	21 ft 2 in. (6.45 m)
With JibPLUS	
E300AJP/E400AJP	18 ft 8 in. (5.70 m)
E400AJP Narrow	22 ft (6.7 m)
Wheelbase	
E300AJ/E300AJP	5 ft 5 in. (1.65 m)
E400A/E400AJP/E400A Narrow	6 ft 7 in. (2.0 m)
E400AJP Narrow/E450A/E450AJ	6 ft 7 in. (2.0 m)
Ground Clearance	
E300AJ/E300AJP	4 in. (10 cm)
E400A/E400AJP/E450A/E450AJ	8.5 in. (22 cm)
E400A Narrow/E400AJP Narrow	5 in. (13 cm)
Weight	
E400A/E400AJP	12,100 lb (5,488 kg)
E400A Narrow/E400AJP Narrow	13,100 lb (5,942 kg)
E450A	12,600 lb (5,715 kg)
With Jib	
E300AJ	15,400 lb (6,985 kg)
E450AJ	14,400 lb (6,532 kg)
With JibPLUS	
E300AJP	15,800 lb (7,166 kg)
E400AJP	13,700 lb (6,214 kg)
E400AJP Narrow	14,900 lb (6,759 kg)
Ground Bearing Pressure	
E300AJ/E300AJP	121 psi (8.47 kg/cm ²)
E400A/E400AJP	80 psi (5.6 kg/cm ²)
E400A Narrow/E400AJP Narrow	95 psi (6.7 kg/cm ²)
E450A	64 psi (4.48 kg/cm ²)
E450AJ	75 psi (5.25 kg/cm ²)
With JibPLUS	
E300AJP	130 psi (9.1 kg/cm ²)
E400AJP	74 psi (5.2 kg/cm ²)
E400AJP Narrow	185 psi (13.0 kg/cm ²)

Chassis

Drive Speed	
E300AJ/E300AJP	3.0 mph (4.8 kmph)
E400A Narrow/E400AJP Narrow	3.0 mph (4.8 kmph)
E400A/E400AJP/E450A/E450AJ	3.2 mph (5.2 kmph)
Gradeability	
E300AJ/E300AJP	25%
E400A/E400AJP/E400A Narrow	30%
E400AJP Narrow/E450A/E450AJ	30%
Turning Radius (Inside)	
E300AJ/E300AJP	5 ft (1.52 m)
E400A/E400AJP/E450A/E450AJ	2 ft (61 cm)
E400A Narrow/E400AJP Narrow	2 ft 10 in. (86 cm)
Turning Radius (Outside)	
E300AJ/E300AJP	10 ft 2 in. (3.1 m)
E400A/E400AJP/E400A Narrow	10 ft 4 in. (3.15 m)
E400AJP Narrow/E450A/E450AJ	10 ft 4 in. (3.15 m)
Tire Size/Type	
E300AJ/E300AJP	7.5 x 12 Non-Marking
E400A/E400AJP	240/55-17.5 pneumatic
E450A/E450AJ	240/55-17.5 pneumatic
Tire Size/Type (front)	
E400A Narrow/E400AJP Narrow	22 x 6 x 17.5 Non-Marking
Tire Size/Type (back)	
E400A Narrow/E400AJP Narrow	22 x 7 x 12 Non-Marking

Power Source

Electrical System	
Batteries	48V DC
Drive Motors	8 x 6V, 370 amp-hr
Brakes	Dual Electric Traction
Hydraulic Motor/Pump	Automatic Spring Applied Multiple Disks
Motor/Gear Pump	Permanent Magnet
Hydraulic Reservoir	
E300AJ/E300AJP	3 gal. (11.4 L)
E400A/E400AJP/E400A Narrow	4 gal. (15.2 L)
E400AJP Narrow/E450A/E450AJ	4 gal. (15.2 L)
Generator Set (Multi-Power Options)	
E400A/E400AJP/E400A Narrow	Fully Automatic,
E400AJP Narrow/E450A/E450AJ	45 Amp Kubota 6 hp
	Air-Cooled Engine
Engine Fuel Tank	
E400A/E400AJP/E400A Narrow	4 gal. (15.2 L)
E400AJP Narrow/E450A/E450AJ	4 gal. (15.2 L)



JLG Industries, Inc.

1 JLG Drive
McConnellsburg, PA 17233-9533
Telephone 717-485-5161
Toll-free in US 877-JLG-LIFT
Fax 717-485-6417
www.jlg.com

An Oshkosh Corporation Company

Form No.: SS-EB00MS-1202-10M
Part No.: 3131119
R030905
Printed in USA



Photo A01: AERIAL LIFT DELIVERY (TROPICAL DOME)



Photo A02: LIFT ENTRY THROUGH MAIN ENTRANCE (TROPICAL DOME)



Photo A03: AERIAL LIFT SETUP IN POSITION #1 (TROPICAL DOME)



Photo A04: AERIAL LIFT IN ACTION, TELESCOPING AND ARTICULATING BOOM
(TROPICAL DOME)



Photo A05: SETUP IN BEHIND-THE-SCENES LOCATION. THIS AREA OFFERS ACCESS TO NORTH SECTORS AND ALLOWS THE LIFT TO BE STORED OUT OF PUBLIC VIEW. (DESERT DOME)



Photo A06: LIFT BEARING ON TIMBER MATS OFF THE PAVED PATH (DESERT DOME)



Photo A07: LIFT BEARING ON STEEL SPANNING OVER PLANTS AND DRAGON BLOOD TREE (DESERT DOME)



Photo A08: AERIAL LIFT IN ACTION, TELESCOPING AND RETICULATING BOOM (DESERT DOME)



Photo A09: AERIAL LIFT SETUP (SHOW DOME)



Photo A10: AERIAL LIFT MOVE WITH PLYWOOD OVER PAVERS (SHOW DOME)

Appendix B:

SOIL AMENDMENTS

Project Name:	Tropical Dome	Date:	10/15/2013
Project Location:	Milwaukee, WI	Report to:	GRAEF
Project Number:	13102-40		
Summary of Services: Dynamic Cone Penetrometer Tests			
<p>At the request of a representative from GRAEF, GESTRA Engineering (GESTRA) performed dynamic cone penetrometer (DCP) tests at 18 marked locations in the tropical dome at the Mitchell Park Conservatory (The Domes) located in Milwaukee, WI.</p> <p>The 18 locations correspond to planned locations for setting outriggers from a man lift to be used by GRAEF for access to the Mitchell Park Tropical Dome structure as part of their ongoing structure inspection. Based on information provided by GRAEF, each outrigger foot has a 10 inch x 15 inch pad and exerts a maximum total load of 5,000 pounds. GRAEF intends to expand the footprint of the outrigger plates to a minimum 4-square foot area using 6x6 hardwood blocks and planks which will reduce the effective load for each outrigger to approximately 1,300 psf.</p> <p>GESTRA performed 18 dynamic cone penetrometer (DCP) tests to a depth of 24 and 30 inches recording resistance over 6 inch increments to estimate the bearing capacity of the existing soils using a single mass dynamic cone penetrometer (10 lb. hammer), see Figure 1 for DCP locations. Based on variability and unknown conditions of the existing soil, GESTRA used an assumed bearing capacity of 1,500 psf for comparison for the DCP testing. The following is a summary of the test results, see attached excavation observation report form for DCP blow counts at specific locations.</p> <ul style="list-style-type: none">• All locations were consistent with one another in terms of blow counts and an estimated bearing capacity of less than (<) 1,500 pounds per square foot (psf) within the first 6 inches.• Locations that did not encounter an estimated bearing capacity of greater than (>) 1,500 psf within the top 24 inches were locations: 1A, 2D, 4B, 4D, 5B, 5C, 7A, 7C, and 7D.• Locations that met an estimated bearing capacity of 1,500 psf or greater from 6 to 12 inches were 1D, 4A, and 7B.• Locations that met an estimated bearing capacity of 1,500 psf or greater from 12 to 18 inches were 2C, 3B, 3C, and 5A.• Locations that met an estimated bearing capacity of 1,500 psf or greater from 18 to 24 inches were 2A and 3D.• Location 2D was driven past the depth of 24 inches at which the estimated bearing capacity was greater than 1,500 psf. <p>Hand Auger borings were performed at five of the locations, 1A, 2D, 4B, 5B and 7D to determine underlying soils. All locations had a similar soil profile, within the top 6 inches being dark brown moist topsoil (sandy clay). From 6 to 18 inches the soil transitioned to dark brown moist lean clay with trace organic matter. At approximately 19 inches gravel was found which made for harder augering. Differences were that 1A had brown sand seams at approximately 20 inches and 7D had an apparent void from approximately 12" to 16" then became gravelly and difficult to advance the auger at 16 inches.</p>			

No surface preparation, aside from removing vegetation, or compaction was performed prior to the DCP tests.

Service
Entrance



GESTRA Engineering, Inc.

Reported To:	Marco T. Lo Ricco	Time Arrived	8:00 am
Company:	GRAEF	Time Left	12:00 pm
Position:	Project Manager	Total Hour at site	4 hr. + 2 hr. (Report)
Reviewed by:	R. English	Mobilization:	20 min
		Miles:	10



Excavation Observation Report

GESTRA Engineering, Inc.
715 Post Road Suite A
Madison, Wisconsin 53713
P 608-222-9406; F 608-222-9408

Job Name and Location: Tropical Dome, Milwaukee, WI

General Test Location: Man Lift Outrigger Pads

Contractor: GRAEF

Design Soil Bearing Pressure: 1,500 (max) PSF Plan Sheet No.

Geotechnical Report Written By: NA on

Project Number: 13102-40

Date: 10/14/2013

Technician: D. Born

Reviewed by: R. English

Page 1 of 3

Test No.	Location	Soil Description	Design Bottom of Footing Elevation	Elevation of Observation	Actual Bottom of Footing Elevation	Over Excavation Depth	Notes	Cone Penetration SM DCP Test* ASTM D-3441 05		Depth to bearing capacity >1,500 (psf)
								Blows	Depth	
	1A	Topsoil, dark brown, moist 0"-6" Lean clay, dark brown, moist trace to with organic matter 6" to 24", with sand at 20"					24" to 30" = 8 blows	4	0"-6"	NE
								7	6"-12"	
								5	12"-18"	
								4	18"-24"	
	1D						24" to 30" = 20 blows	4	0"-6"	6"
								9	6"-12"	
								11	12"-18"	
								15	18"-24"	
	2A							6	0"-6"	18"
								7	6"-12"	
								8	12"-18"	
								11	18"-24"	
	2D	Topsoil, dark brown, moist 0" - 6" Lean clay, dark brown, moist, trace to with organic matter 6" -24", with gravel at 19"					24" to 30" = 22 blows	1	0"-6"	24"
								3	6"-12"	
								5	12"-18"	
								7	18"-24"	
	2C							4	0"-6"	12"
								4	6"-12"	
								11	12"-18"	
								17	18"-24"	
	3B						24" to 30" = 7 blows	3	0"-6"	12"
								7	6"-12"	
								9	12"-18"	
								12	18"-24"	

Remarks: Over Excavation Backfilled to Design Elevation with: NE

NE - Not Encountered

Soil bearing pressure presumed by GRAEF based on 2 ft by 2 ft pad below lift outrigger.

Note: *The Single Mass Dynamic Cone Penetrometer (DCP) is an instrument with a 10 lb. hammer falling 23" driving a conical steel tip.

General Information

Time Arrive: 8:00 am	Time Depart: 12:00 pm	Total hrs on Job: 4 hrs	Travel Time: 20 min.	Mileage (R/T): 10
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Excavation Observation Report

GESTRA Engineering, Inc.
715 Post Road Suite A
Madison, Wisconsin 53713
P 608-222-9406; F 608-222-9408

Job Name and Location: Tropical Dome, Milwaukee, WI

General Test Location: Man Lift Outrigger Pad

Contractor: GRAEF

Design Soil Bearing Pressure: 1,500 (max) PSF **Plan Sheet No.**

Geotechnical Report Written By: NA **on**

Project Number: 13102-40

Date: 10/14/2013

Technician: D. Born

Reviewed by: R. English

Page 2 of 3

Test No.	Location	Soil Description	Design Bottom of Footing Elevation	Elevation of Observation	Actual Bottom of Footing Elevation	Over Excavation Depth	Notes	Cone Penetration SM DCP Test* ASTM D-3441 05		Depth to bearing capacity >1,500 (psf)
								Blows	Depth	
	3C							2	0"-6"	12"
								7	6"-12"	
								18	12"-18"	
								16	18"-24"	
	3D							2	0"-6"	18"
								2	6"-12"	
								7	12"-18"	
								25	18"-24"	
	4B	Topsoil (sandy), dark brown moist 0"-6" Lean clay, brown, moist, 6"-24" trace gravel at 22"					24"-30" = 8 blows	2	0"-6"	NE
								4	6"-12"	
								4	12"-18"	
								4	18"-24"	
	4A							8	0"-6"	6"
								10	6"-12"	
								10	12"-18"	
								15	18"-24"	
	4D							5	0"-6"	NE
								7	6"-12"	
								7	12"-18"	
								5	18"-24"	
	5B	Topsoil, dark brown, moist 0"-6" Lean clay, dark brown, 6"-24" with gravel at 17"						0	0"-6"	NE
								5	6"-12"	
								8	12"-18"	
								5	18"-24"	

Remarks: **Over Excavation Backfilled to Design Elevation with:** NA

NE - Not Encountered

Soil bearing pressure presumed by GRAEF based on 2 ft by 2 ft pad below lift outrigger.

Note: *The Single Mass Dynamic Cone Penetrometer (DCP) is an instrument with a 10 lb. hammer falling 23" driving a conical steel tip.

General Information

Time Arrive: 8:00 am	Time Depart: 12:00 pm	Total hrs on Job: 4 hrs	Travel Time: 20 min.	Mileage (R/T): 10 miles
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Excavation Observation Report

GESTRA Engineering, Inc.
715 Post Road Suite A
Madison, Wisconsin 53713
P 608-222-9406; F 608-222-9408

Job Name and Location: Tropical Dome, Milwaukee, WI

General Test Location: Man Lift Outrigger Pads

Contractor: GRAEF

Design Soil Bearing Pressure: 1,500 (max) PSF Plan Sheet No.

Geotechnical Report Written By: NA on

Project Number: 13102-40

Date: 10/14/2013

Technician: D. Born

Reviewed by: R. English

Page 3 of 3

Test No.	Location	Soil Description	Design Bottom of Footing Elevation	Elevation of Observation	Actual Bottom of Footing Elevation	Over Excavation Depth	Notes	Cone Penetration SM DCP Test* ASTM D-3441 05		Depth to bearing capacity >1,500 (psf)
								Blows	Depth	
	5A							5 7 13 9	0"-6" 6"-12" 12"-18" 18"-24"	12"
	5C							3 4 3 2	0"-6" 6"-12" 12"-18" 18"-24"	NE
	7A	Topsoil (sandy), dark brown moist, 0"-6" Lean clay, brown, moist 6"-24" trace gravel at 22"						3 4 4 5	0"-6" 6"-12" 12"-18" 18"-24"	NE
	7B							6 10 13 13	0"-6" 6"-12" 12"-18" 18"-24"	6"
	7C							1 3 7 7	0"-6" 6"-12" 12"-18" 18"-24"	NE
	7D	Topsoil (sandy), dark brown moist, 0"-6" Lean clay, brown, moist 6"-24" with gravel at 17"					3" to 4" void at 12"	1 2 1 0	0"-6" 6"-12" 12"-18" 18"-24"	NE

Remarks: Over Excavation Backfilled to Design Elevation with:

NE - Not Encountered

Soil bearing pressure presumed by GRAEF based on 2 ft by 2 ft pad below lift outrigger

Note: *The Single Mass Dynamic Cone Penetrometer (DCP) is an instrument with a 10 lb. hammer falling 23" driving a conical steel tip.

General Information

Time Arrive: 8:00 am	Time Depart: 12:00 pm	Total hrs on Job: 4 hrs	Travel Time: 20 min.	Mileage (R/T): 10 miles
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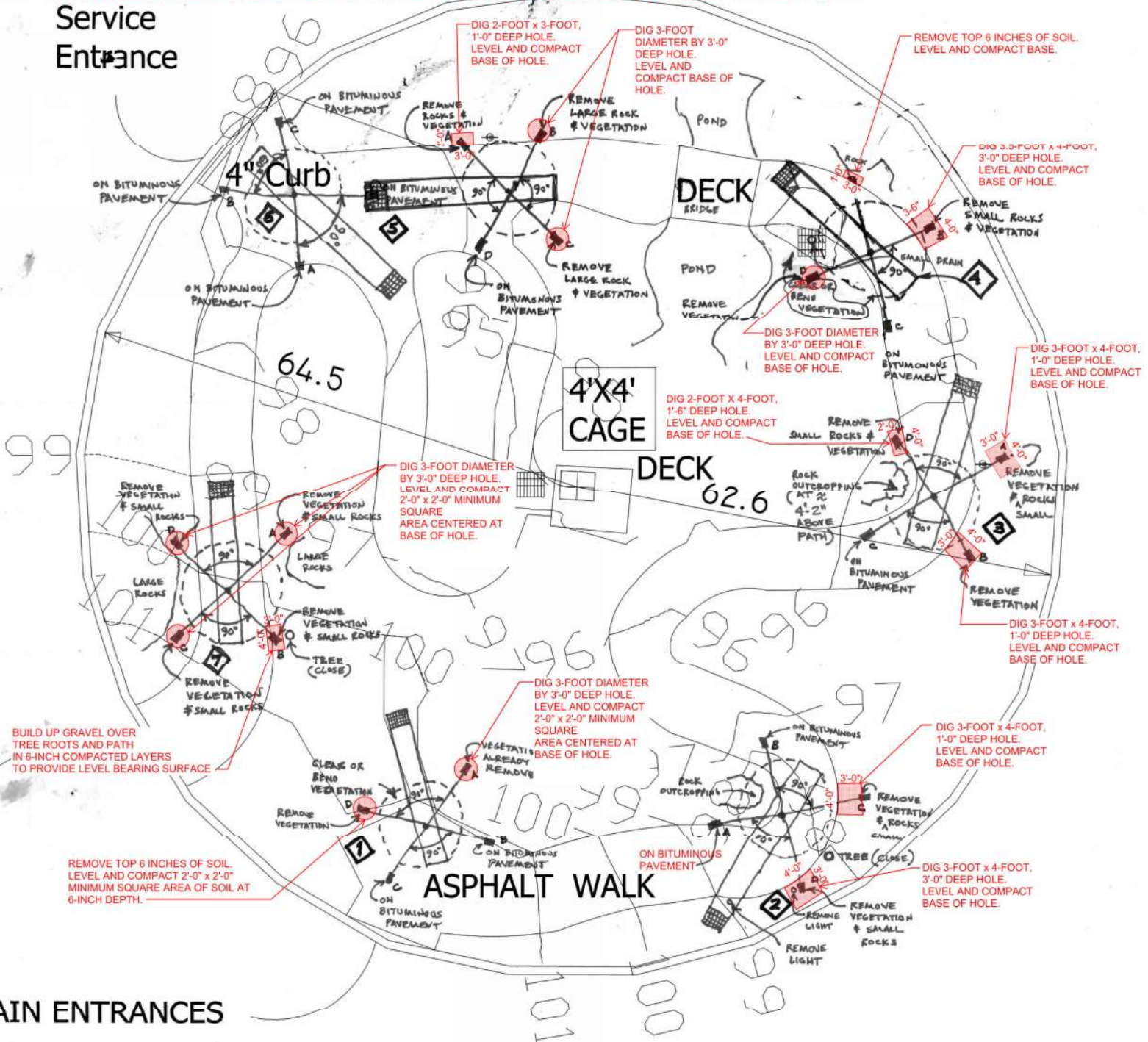
NOTES:

-EXCAVATE ONLY TO THE SPECIFIED DEPTHS. SEEK APPROVAL FROM THE ENGINEER IF OVER-EXCAVATION MAY BE REQUIRED.

-LOCATE BURIED LOW-VOLTAGE LIGHTING CONDUCTORS, WATER SUPPLY PIPES, AND OTHER UTILITIES OR EQUIPMENT PRIOR TO DIGGING.

-COMPACTION OF SOILS SHALL BE ACHIEVED THROUGH THE USE OF A MECHANICALLY OPERATED PLATE COMPACTOR.

Service
Entrance

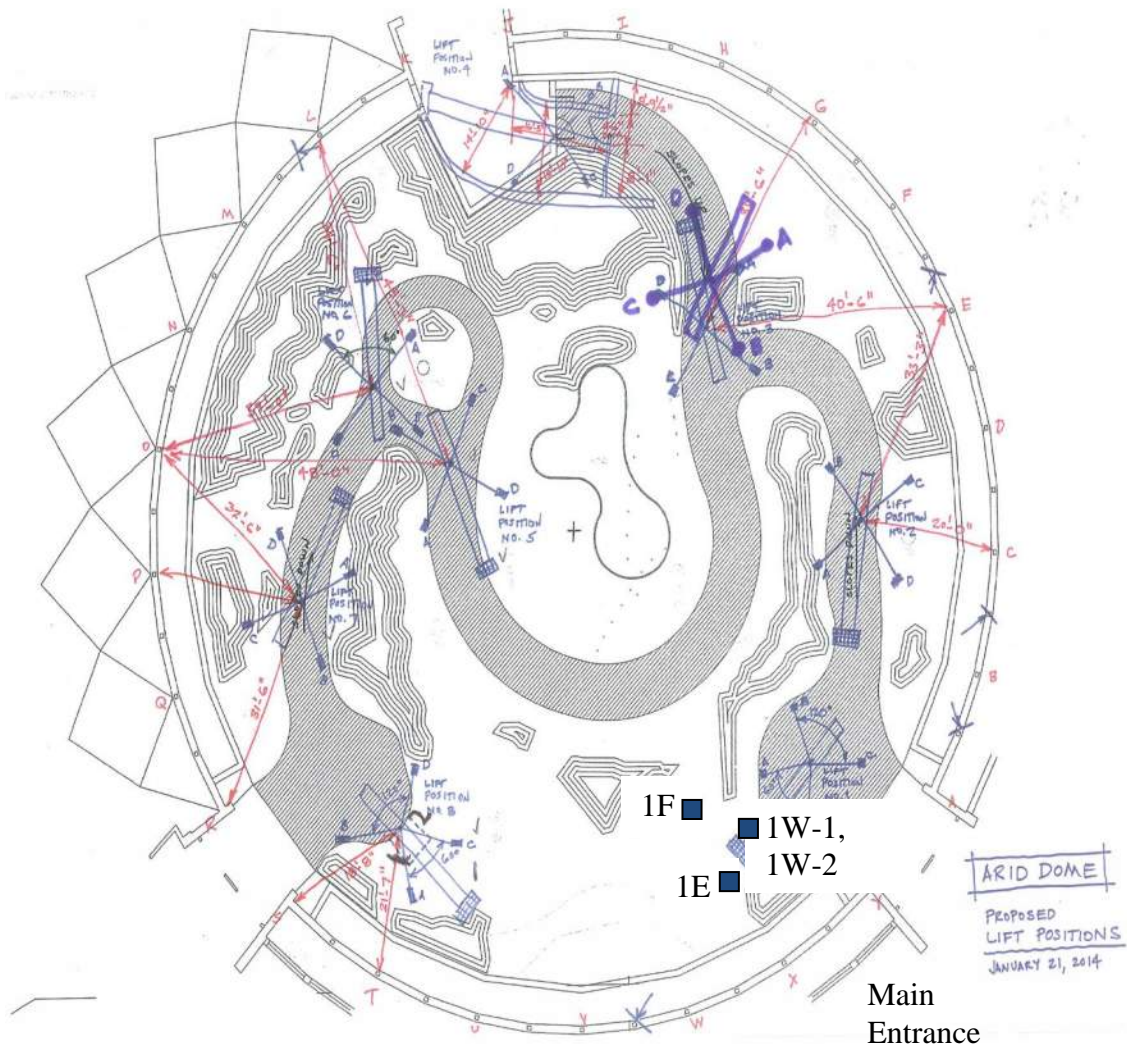


B7

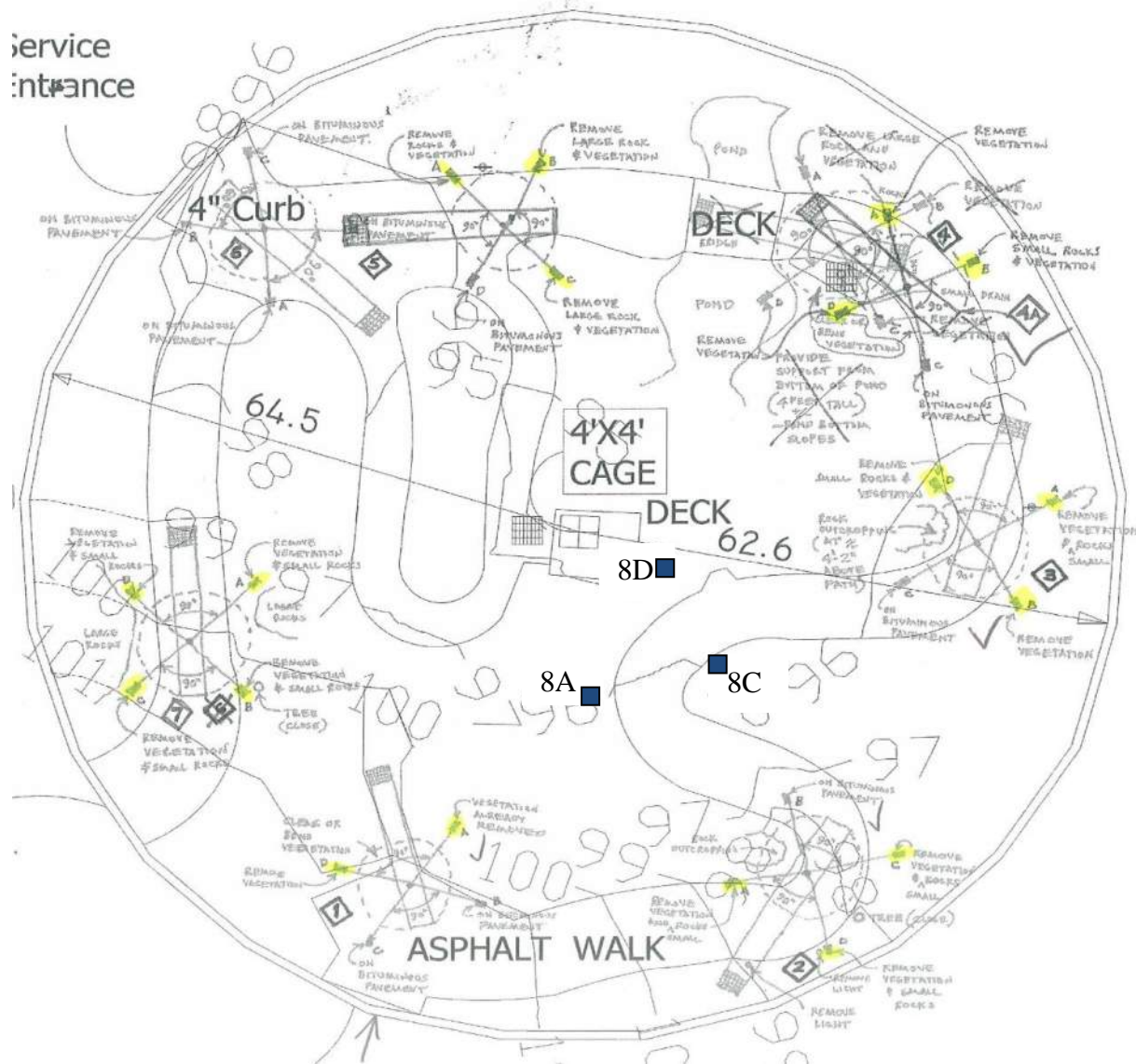


Project Name:	Arid Dome	Date:	03/03/2014
Project Location:	Milwaukee, WI	Report to:	GRAEF
Project Number:	14008-40		
Summary of Services: Dynamic Cone Penetrometer Tests			
<p>At the request of a representative from GRAEF, GESTRA Engineering (GESTRA) performed dynamic cone penetrometer (DCP) tests at 6 marked locations in the arid dome and tropical dome at the Mitchell Park Conservatory (The Domes) located in Milwaukee, WI.</p> <p>The 6 locations correspond to planned locations for setting outriggers from a man lift to be used by GRAEF for access to the Mitchell Park Arid Dome and Tropical Dome structure as part of their ongoing structure inspection. Based on information provided by GRAEF, each outrigger foot has a 10 inch x 15 inch pad and exerts a maximum total load of 5,000 pounds. GRAEF intends to expand the footprint of the outrigger plates to a minimum 4-square foot area using 6x6 hardwood blocks and planks which will reduce the effective load for each outrigger to approximately 1,300 psf.</p> <p>GESTRA performed 7 dynamic cone penetrometer (DCP) tests to a depth of 24 inches recording resistance over 6 inch increments to estimate the relative density of the existing soils using a single mass dynamic cone penetrometer (10 lb. hammer), see Figure 1 and 2 for DCP locations. GESTRA assumed a maximum load of 1,500 psf at each location. The DCP testing was compared to typically recommended soil to support an allowable bearing capacity of 1,500 psf. The following is a summary of the test results, see attached excavation observation reports form for DCP blow counts at specific locations.</p> <ul style="list-style-type: none">• Location that did not encounter material with an estimated bearing capacity of greater than (>) 1,500 psf within the top 24 inches was location: 8D (Tropical Dome).• Location that indicated an estimated bearing capacity of 1,500 psf or greater from 0 to 6 inches was 8C (Tropical Dome).• Location that indicated an estimated bearing capacity of 1,500 psf or greater from 6 to 12 inches was 1E (Desert Dome).• Location that indicated an estimated bearing capacity of 1,500 psf or greater from 12 to 18 inches was 8A (Tropical Dome).• Location that indicated an estimated bearing capacity of 1,500 psf or greater from 18 to 24 inches was 1F (Desert Dome).• GRAEF requested a DCP test at location 1 where the wheels of the lift will sit, these locations 1W1 and 1W2 indicated an estimated bearing capacity of 1,500 psf at a test depth greater than 6 inches for 1W-2 and this material was not encountered in the 24 inch test depth at 1W1. GESTRA recommends GRAEF should remove 12 inches and backfill with compacted granular fill at the location where the lift will travel. <p>No surface preparation, aside from removing vegetation, or compaction was performed prior to the DCP tests.</p>			

Figure 1 Desert (Arid) Dome



Service
Entrance



By: Ryan English

GESTRA Engineering, Inc.

Reported To:	Mark Rapant	Time Arrived	10:30 am
Company:	GRAEF	Time Left	11:30 am
Position:	Project Manager	Total Hour at site	1.0 hr. + 0.5 hr. (Report)
Reviewed by:	D. Dettmers	Mobilization:	20 min
		Miles:	10



Excavation Observation Report

GESTRA Engineering, Inc.
1626 W. Fond du Lac Ave
Milwaukee, Wisconsin 53205
P 414-933-7444; F 414-933-7844

Job Name and Location: Arid Dome, Milwaukee, WI

General Test Location: Man Lift Outrigger Pads

Contractor: GRAEF

Design Soil Bearing Pressure:	1,500 (max) <i>PSF</i>	Plan Sheet No.
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Geotechnical Report Written By: NA **on** _____

Project Number: 14008-40

Date: 3/3/2014

Technician: R. English

Reviewed by: D. Dettmers

Page 1 of 2[illegible]

Remarks: **Over Excavation Backfilled to Design Elevation with:** NE

NE - Not Encountered

Soil bearing pressure presumed by GRAEF based on 2 ft by 2 ft pad below lift outrigger.

Note: *The Single Mass Dynamic Cone Penetrometer (DCP) is an instrument with a 10 lb. hammer falling 23" driving a conical steel tip.

General Information						
Time Arrive: 10:30 am	Time Depart: 11:30 am	Total hrs on Job:	1.0hrs	Travel Time:	20 min.	Mileage (R/T): 10



Excavation Observation Report

GESTRA Engineering, Inc.
1626 W. Fond du Lac Ave
Milwaukee, Wisconsin 53205
P 414-933-7444; F 414-933-7844

Job Name and Location: Tropical Dome, Milwaukee, WI
General Test Location: Man Lift Outrigger Pads
Contractor: GRAEF
Design Soil Bearing Pressure: 1,500 (max) PSF **Plan Sheet No.**
Geotechnical Report Written By: NA **on**

Project Number: 14008-40
Date: 3/3/2014
Technician: R. English
Reviewed by: D. Dettmers

Page 2 of 2

Test No.	Location	Soil Description	Design Bottom of Footing Elevation	Elevation of Observation	Actual Bottom of Footing Elevation	Over Excavation Depth	Notes	Cone Penetration SM DCP Test* ASTM D-3441 05		Depth to bearing capacity >1,500 (psf)
								Blows	Depth	
	8A	Organic Silt and clay					20 blows for 4 inches from 12 to 16 inches	4 5 20	0"-6" 6"-12" 12-16" 18"-24"	12"
	8C	Organic Silt and clay					DCP bouncing at 3 inches, tried 3 times and refusal at 3 inches	9	0"-3" 6"-12" 12"-18" 18"-24"	0"
	8D	Organic Silt and clay						4 3 3 4	0"-6" 6"-12" 12"-18" 18"-24"	NE

Remarks: **Over Excavation Backfilled to Design Elevation with:** Locations 8A, 8C, and 8D are located in the tropical dome.

NE - Not Encountered

Soil bearing pressure presumed by GRAEF based on 2 ft by 2 ft pad below lift outrigger.

Note: *The Single Mass Dynamic Cone Penetrometer (DCP) is an instrument with a 10 lb. hammer falling 23" driving a conical steel tip.

General Information						
Time Arrive: 10:30 am	Time Depart: 11:30 am	Total hrs on Job: 1.0hrs	Travel Time: 20 min.	Mileage (R/T): 10		



Project Name:	Show Dome	Date:	04/29/2014
Project Location:	Milwaukee, WI	Report to:	GRAEF
Project Number:	14060-40		
Summary of Services: Dynamic Cone Penetrometer Tests			
<p>At the request of a representative from GRAEF, GESTRA Engineering (GESTRA) performed dynamic cone penetrometer (DCP) tests at 6 locations in the Show Dome at the Mitchell Park Conservatory (The Domes) located in Milwaukee, WI.</p> <p>The 6 locations correspond to the planned location for setting up a man lift to be used by GRAEF for access to the Mitchell Park Show Dome structure as part of their ongoing structure inspection. Based on information provided by GRAEF, the maximum tire load for the lift JLG 1250AJP is 23,700 lbs with a total weight of 44,000 lbs. No surface preparation or compaction, aside from removing mulch, was performed prior to the DCP tests.</p> <p>GESTRA performed 6 dynamic cone penetrometer (DCP) tests to a depth of 12 to 18 inches recording resistance over 6 inch increments to estimate the relative density of the existing soils using a single mass dynamic cone penetrometer (10 lb. hammer), see Figure 1 for DCP locations. The DCP testing was compared to common DCP resistance values for soils typically recommended soil to support an allowable bearing capacity up to 3,000 psf. The following is a summary of the test results, see attached excavation observation reports form for DCP blow counts at specific locations.</p> <ul style="list-style-type: none">• Locations that indicated an estimated bearing capacity of 3,000 psf or greater from 0 to 6 inches or deeper were 3, 4, 5, and 6.• Locations that indicated an estimated bearing capacity of 3,000 psf or greater from 6 to 12 inches or deeper were 1 and 2. <p>Hand Auger borings were performed at four of the locations, 1, 3, 5, and 6 to determine underlying soils to depths of 6 inches to 24 inches. Traffic bond was encountered at the surface for locations 3 through 6 with a thickness of ½ inch to 2 inches. All locations had a similar soil profile of brown, moist, sand with to trace gravel from the surface (or below the traffic bond) to the depth range of 15 inches to 20 inches. Location 1 and 6 sandy lean clay was encountered at a depth of 15 inches and 20 inches, respectively.</p> <p>The upper 6 inches of soil at locations 1 and 2 would need to be removed and replaced or compacted from the surface to have soil support conditions similar to the other locations. To provide a more stable surface, a 3 inch layer of traffic bond could be placed over the existing sand. After preparation of locations 1 and 2 GESTRA should verify soil relative density with DCP tests before lift setup.</p> <p>Please note that the field tests and reports assume a short term (on the order of 2-3 hours) duration for the loading of the lift. GESTRA did not evaluate the area of the lift placement to determine if more dense material will be present under the entire lift. As a minimum, we recommend dense material be present in area that extends at least 3 to 4 feet beyond the edge of the wheel loads.</p>			

Figure 1



GESTRA Engineering, Inc.

Geotechnical-Structural-Civil-Construction Material



Excavation Observation Report

GESTRA Engineering, Inc.
1626 W. Fond du Lac Ave
Milwaukee, Wisconsin 53205
P 414-933-7444; F 414-933-7844

Job Name and Location: Show Dome, Milwaukee, WI

General Test Location: Lift setup location

Contractor: GRAEF

Design Soil Bearing Pressure: (max) *PSF* **Plan Sheet No.**

Geotechnical Report Written By: NA **on**

Project Number: 14060-40

Date: 4/29/2014

Technician: R. English

Reviewed by: D. Dettmers

Page 1 of 1

Test No.	Location	Soil Description	Design Bottom of Footing Elevation	Elevation of Observation	Actual Bottom of Footing Elevation	Over Excavation Depth	Notes	Cone Penetration SM DCP Test* ASTM D-3441 05		
								Blows	Depth	
1 ^A	See Figure in Report	Sand, with to trace gravel (0"-15"), Sandy lean clay (15"-20"), Sand with gravel (20"-24")		Ground surface				6	0 - 6	
								25	6 - 12	
2	See Figure in Report	Sand with to trace gravel at surface		Ground surface				8	0 - 6	
								23	6 - 12	
								30	12 - 18	
3 ^A	See Figure in Report	Traffic bond (0"-2"), Sand with to trace gravel (2"-14"), trace clay from (12"-14")		Ground surface			T.B. at surface 1 1/2" or less.	15	0 - 6	
								34	6 - 12	
4	See Figure in Report	Traffic bond (0"-1"), sand with to trace gravel below traffic bond		Ground surface			T.B. at surface 1" or less	16	0 - 6	
								32	6 - 12	
5 ^A	See Figure in Report	Traffic bond (0"-2"), sand with to trace gravel (2"-6")		Ground surface			T.B. at surface 2" thick.	31	0 - 6	
								20	6 - 8	
6 ^A	See Figure in Report	Traffic bond (0"-1"), sand with to trace gravel (1"-20"), sandy lean clay (20"-24")		Ground surface			T.B. at surface 1" or less	14	0 - 6	
								26	6 - 12	
								29	12 - 18	

Remarks: **Over Excavation Backfilled to Design Elevation with:** NE

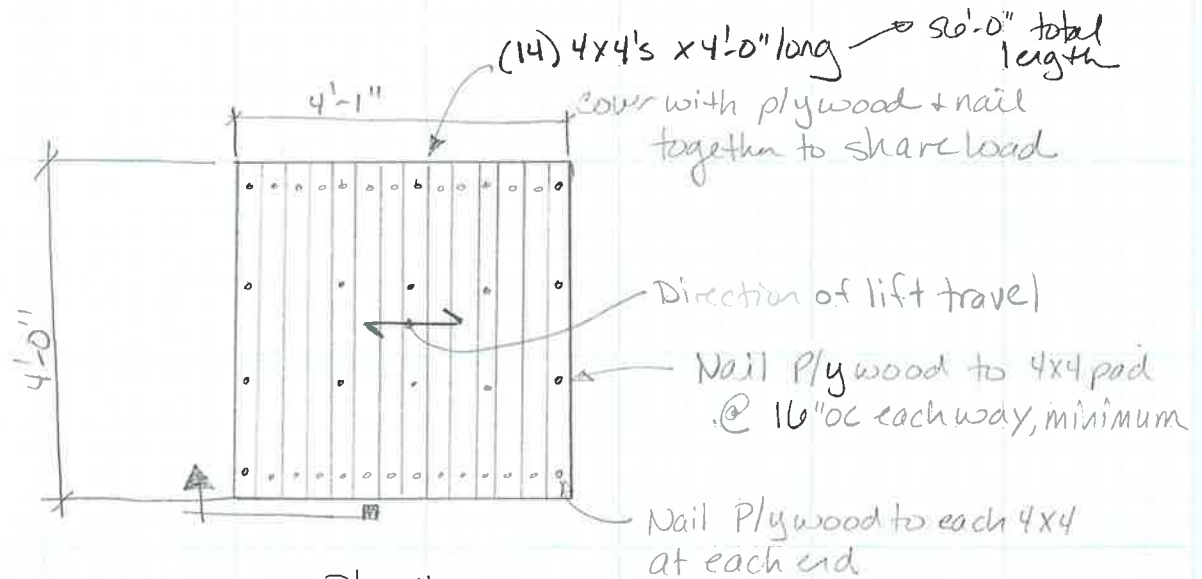
NE - Not Encountered, ^AHand Auger performed at location

Note: *The Single Mass Dynamic Cone Penetrometer (DCP) is an instrument with a 10 lb. hammer falling 23" driving a conical steel tip.

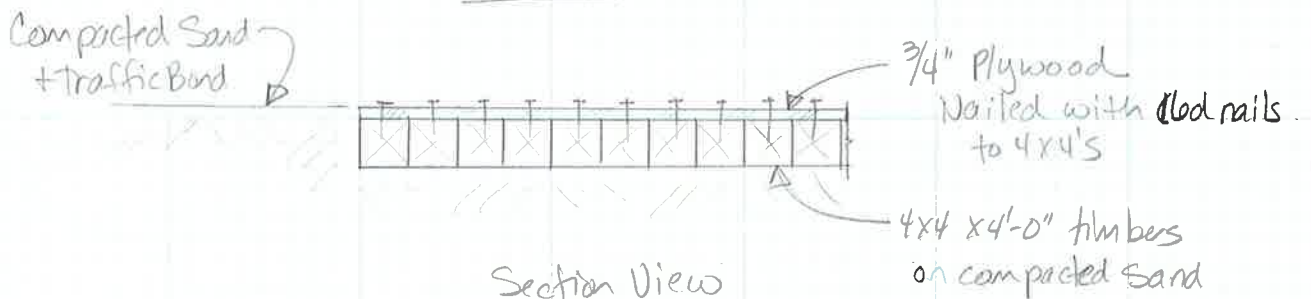
General Information

Time Arrive: 7:00am	Time Depart: 9:00am	Total hrs on Job: 2hrs	Travel Time: 0.3hrs	Mileage (R/T): 10
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Bearing Pads at 125ft Lift



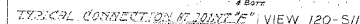
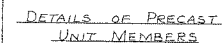
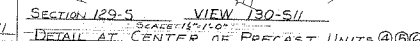
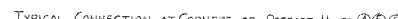
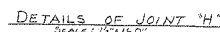
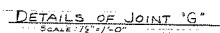
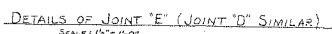
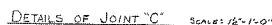
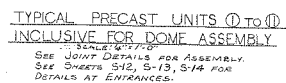
Plan View



Section View

Appendix C:

DETAILS OF EXISTING CONSTRUCTION



REVISIONS
APRIL 15, 1959

DATE	JAN 15 '59
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305 NO.

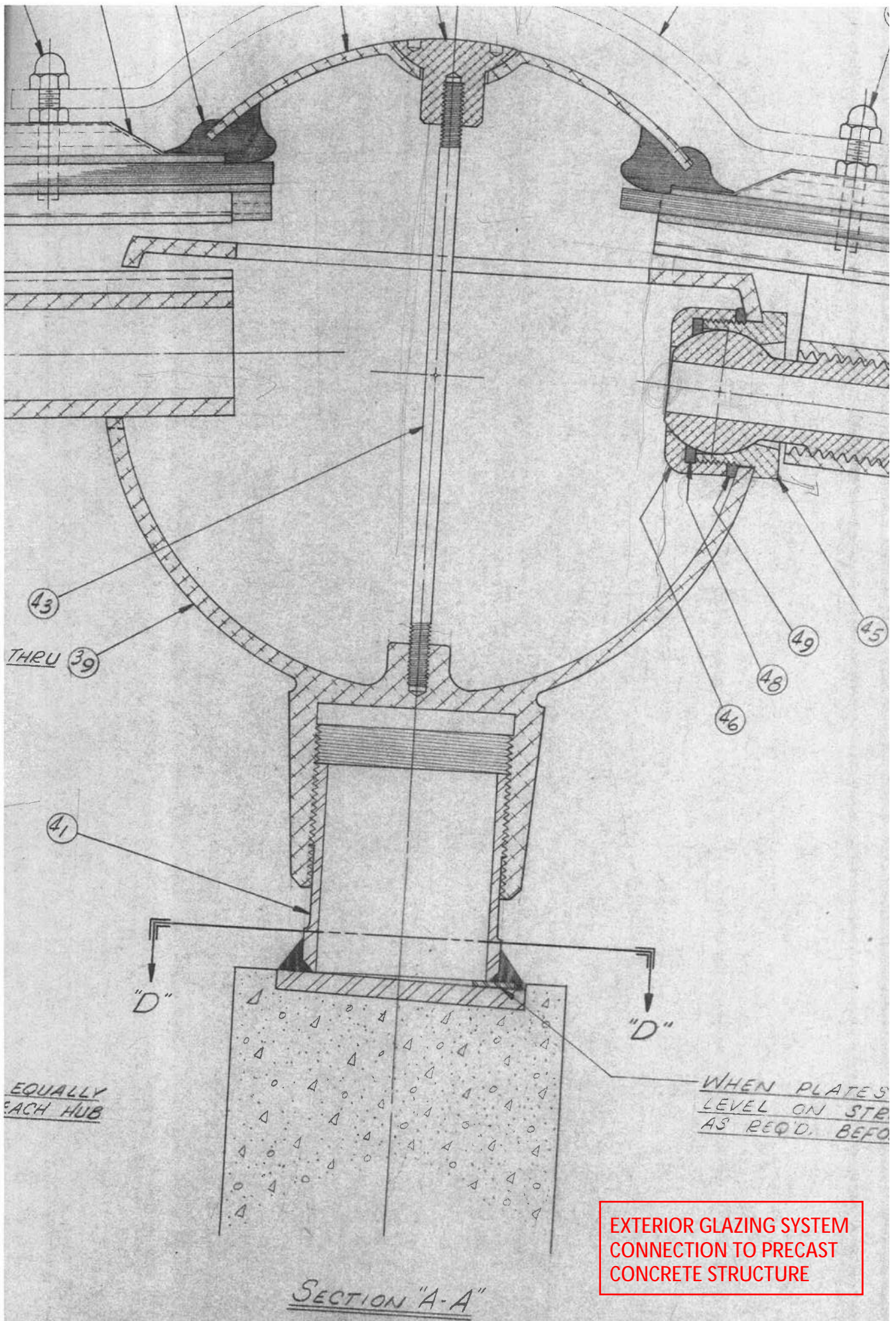
DONALD L. GRIEB

CHARLES S. WHITNEY
CONSULTING ENGINEER
1715

MITCHELL PARK CONSERVATORY
FOR MILWAUKEE COUNTY PARK COMMISSION

44

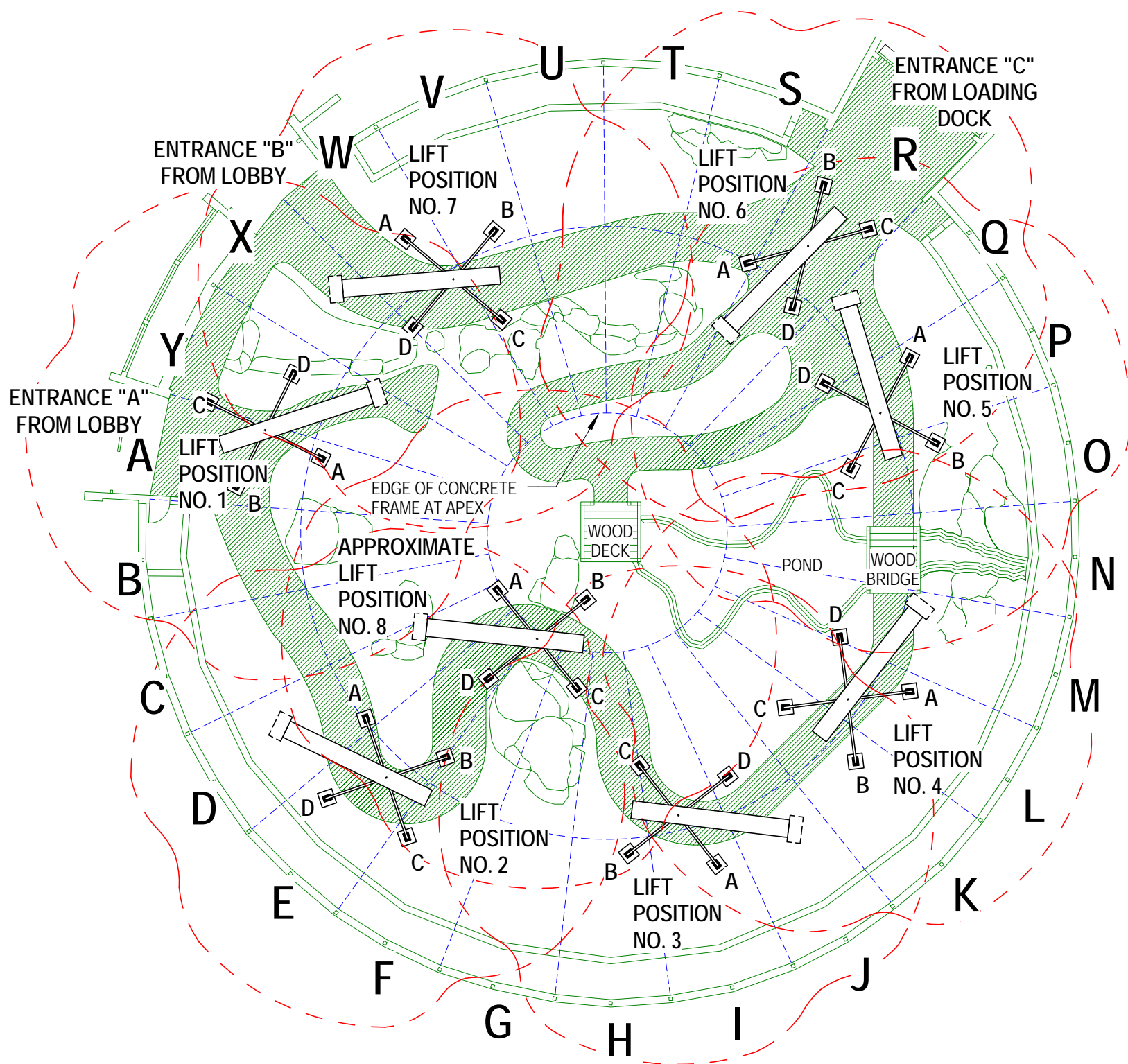
C1



Appendix D:

INSPECTION NOTES

TROPICAL DOME INSPECTION NOTES



POSITIONS 1 AND 2 WERE ACCESSED FROM ENTRANCE A.
ALL OTHERS WERE ACCESSED FROM ENTRANCE B.

GRaEF

PROJECT NUMBER: 2013-0167.01
DATE: 03-07-2014
SCALE: 1" = 20'-0"

PROJECT TITLE: MITCHELL PARK
HORTICULTURAL
CONSERVATORY
SHEET TITLE:

TD

CONCRETE FRAME
EVALUATIONS & REPAIRS

D1

Tropical Dome - Concrete Frame Evaluation Summary

Segment	Total Number of Hubs	Number of Hubs Reviewed	Number of Hubs Inaccessible at Base	Number of Locations with Spalled Concrete	Number of Locations with Spalled Grout	Number of Locations with Exposed Rebar	Notes
A	62	61	1	36	2	1	1 Water Diverter Installed 1 SS Clamp Installed
B	68	64	4	47	1	0	
C	68	64	4	38	3	2	
D	68	64	4	11	4	6	1 SS Clamp Installed
E	68	64	4	18	3	2	
F	68	64	4	18	9	5	1 Water Diverter Installed
G	68	64	4	30	1	5	1 SS Clamp Installed
H	68	64	4	14	4	6	
I	68	64	4	16	5	3	
J	68	64	4	22	3	6	1 Water Diverter Installed
K	68	64	4	24	3	5	2 Water Diverters Installed
L	68	64	4	22	1	3	2 Water Diverters Installed
M	68	64	4	20	2	3	1 Water Diverter Installed and 1 Severe Beam Delamination
N	68	64	4	22	3	7	1 Water Diverter Installed
O	68	64	4	21	1	8	4 Water Diverters Installed
P	68	64	4	28	2	7	
Q	68	64	4	22	1	1	5 Water Diverters Installed
R	64	61	1	21	5	2	1 Water Diverter Installed and 1 Severe Beam Delamination
S	68	64	4	16	4	2	1 SS Clamp Installed
T	68	63	5	22	9	1	4 Water Diverters Installed
U	68	63	5	29	5	7	4 Water Diverters Installed
V	68	63	5	25	0	10	3 Water Diverters Installed
W	66	63	3	28	5	7	2 Water Diverters Installed
X	65	63	2	25	4	3	
Y	68	64	4	31	4	2	
Totals	1685	1589	94	606	84	104	
		94.3% of Total	5.6% of Total	38.1% of Total Reviewed	5.3% of Total Reviewed	6.5% of Total Reviewed	

LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
- 12 CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- IN 3 CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- OUT 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- IN 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

1

SECTOR A

NTS

TROPICAL DOME

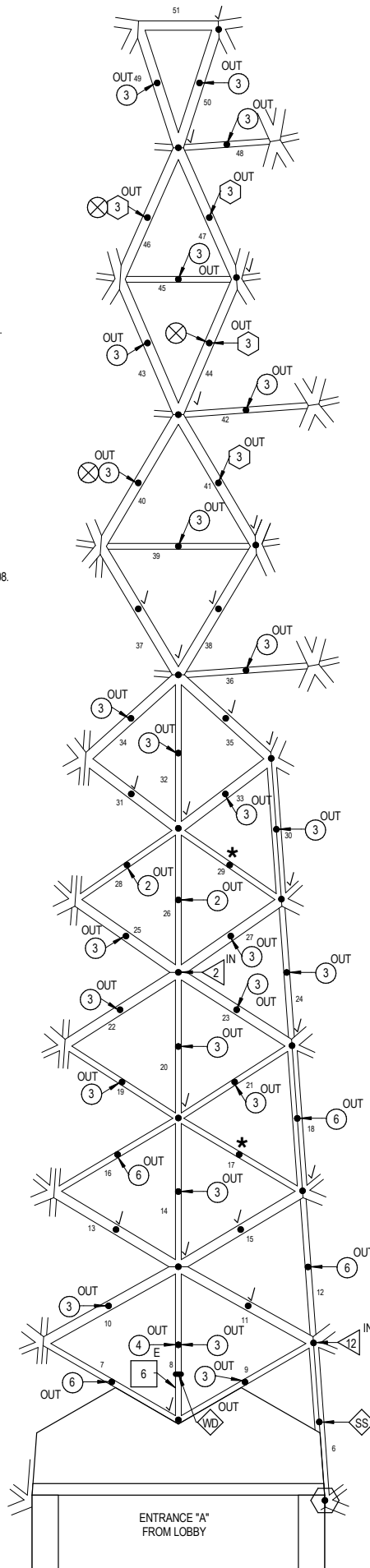
GRÄEF

PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR A FIELD NOTES

T101

D3



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
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- OUT 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- A NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

1

SECTOR B

NTS

TROPICAL DOME

GRÄEF

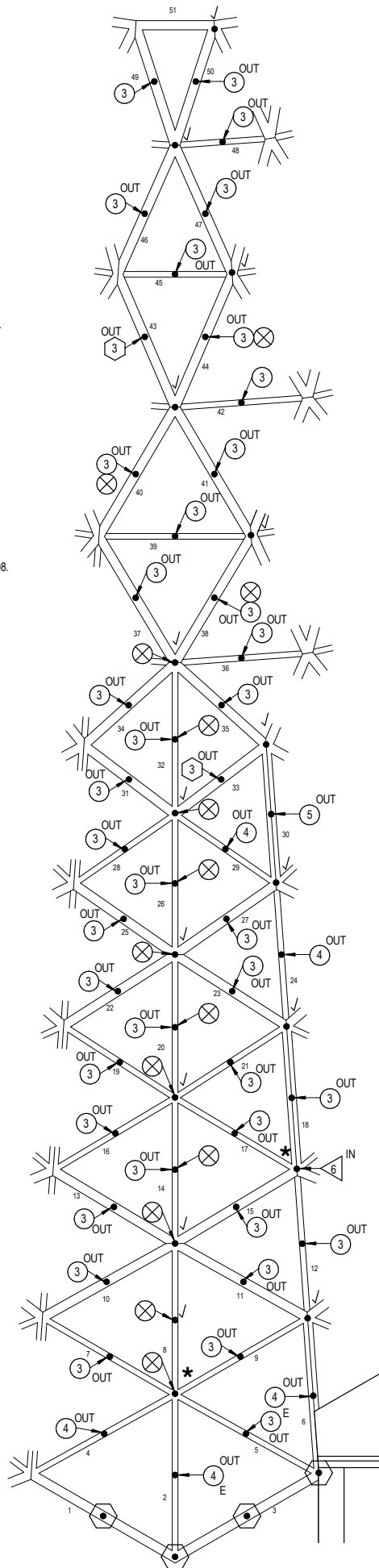
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DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR B FIELD NOTES

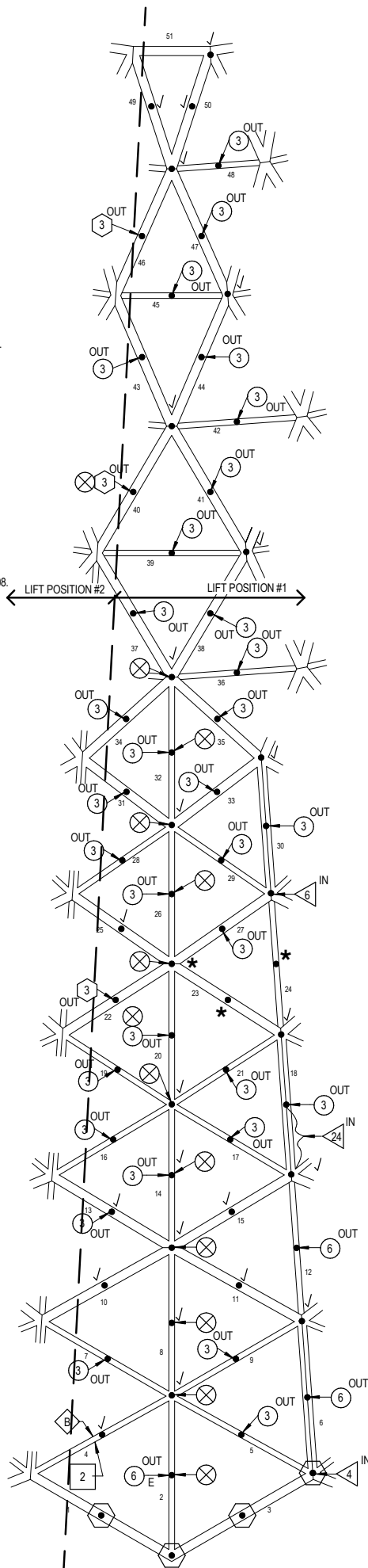
T102

D4



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
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- NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
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- NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE



1 SECTOR C

NTS

TROPICAL DOME

GräEF

PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR C FIELD NOTES

T103

D5

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- OUT 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- IN 3: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- OUT 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- OUT 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

1

SECTOR E

NTS

TROPICAL DOME

GRÄEF

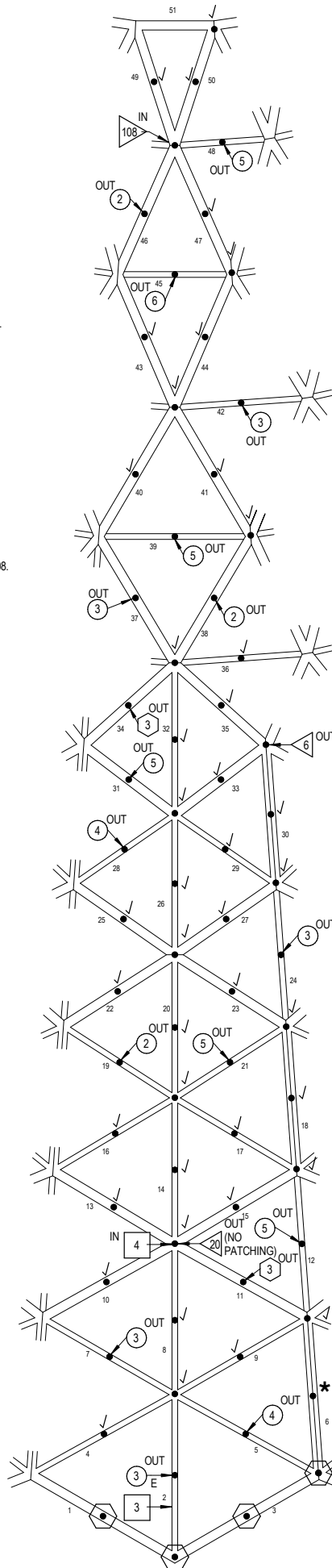
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DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR E FIELD NOTES

T105

D7

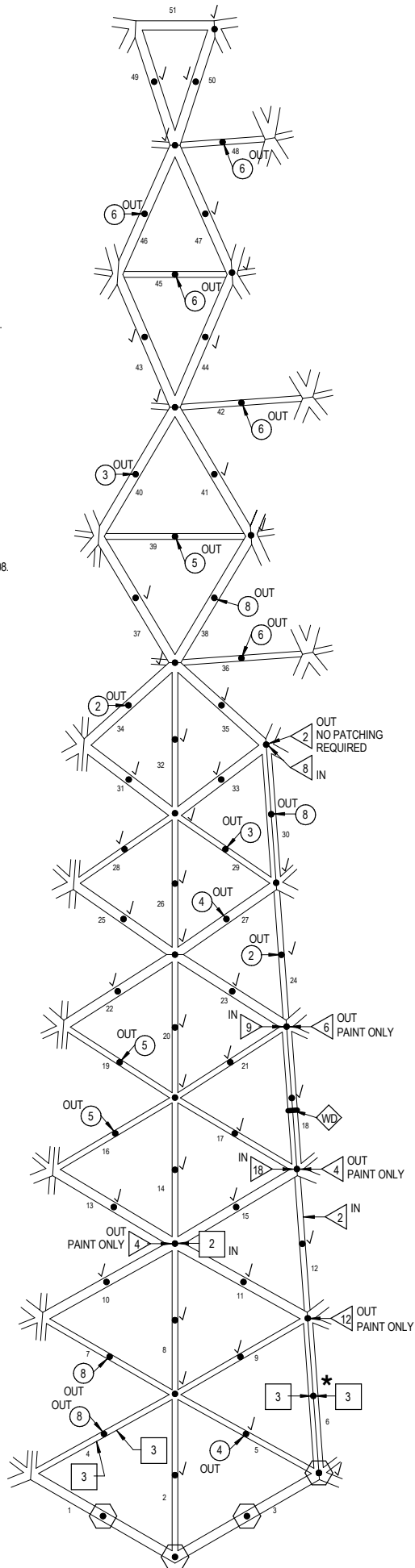


LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

SECTOR F

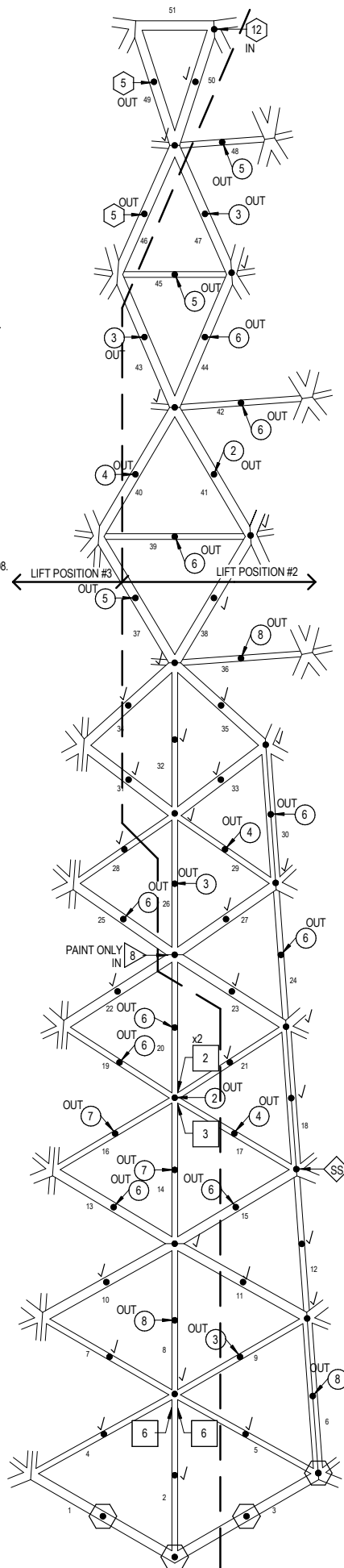
3/16" = 1'-0"



TROPICAL DOME

LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
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- IN 3 CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
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- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE



1

SECTOR G

NTS

TROPICAL DOME

GRÄEF

PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR G FIELD NOTES

T107

D9

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- 3 IN: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4 OUT: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

SECTOR H

NTS

TROPICAL DOME

GRÄEF

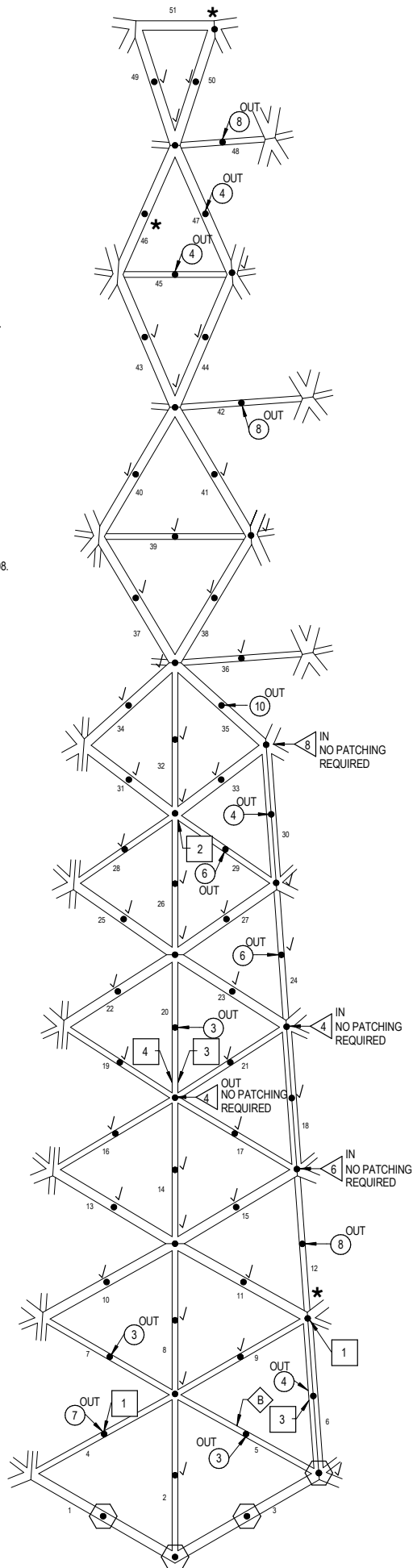
PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR H FIELD NOTES

T108

D10



LEGEND

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- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
- 12 CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- IN 3 CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- OUT 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- IN 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

SECTOR I

NTS

TROPICAL DOME

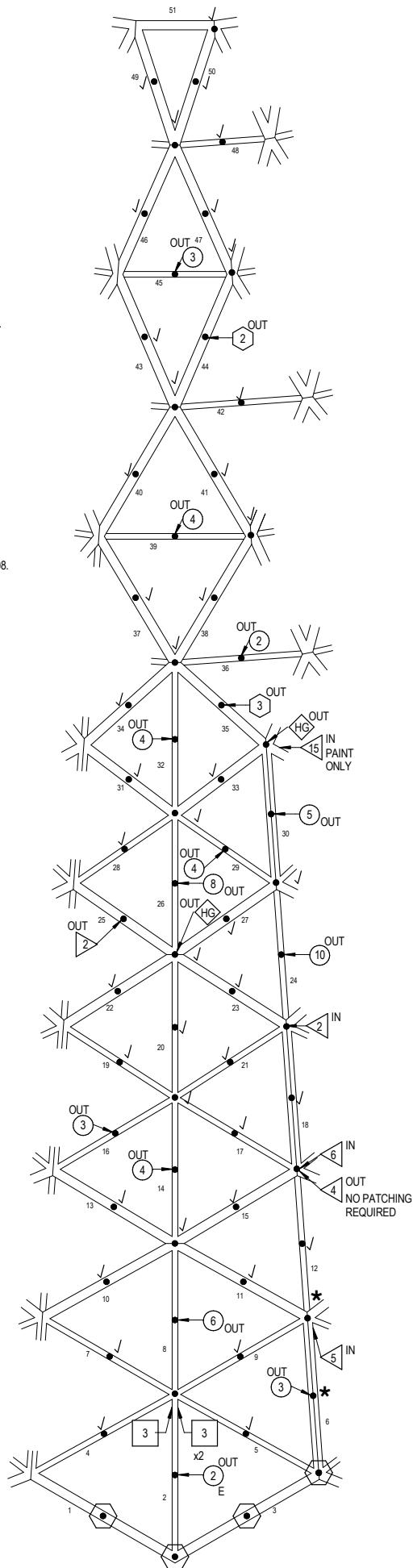
GRÄEF

PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR I FIELD NOTES

T109

D11



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

1 SECTOR J

NTS

TROPICAL DOME

GRÄEF

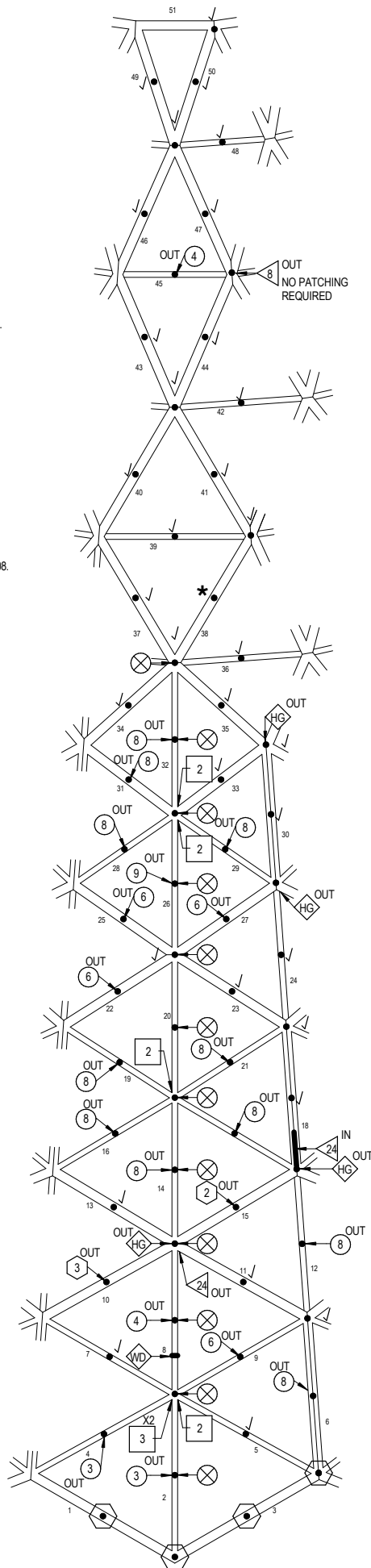
PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR J FIELD NOTES

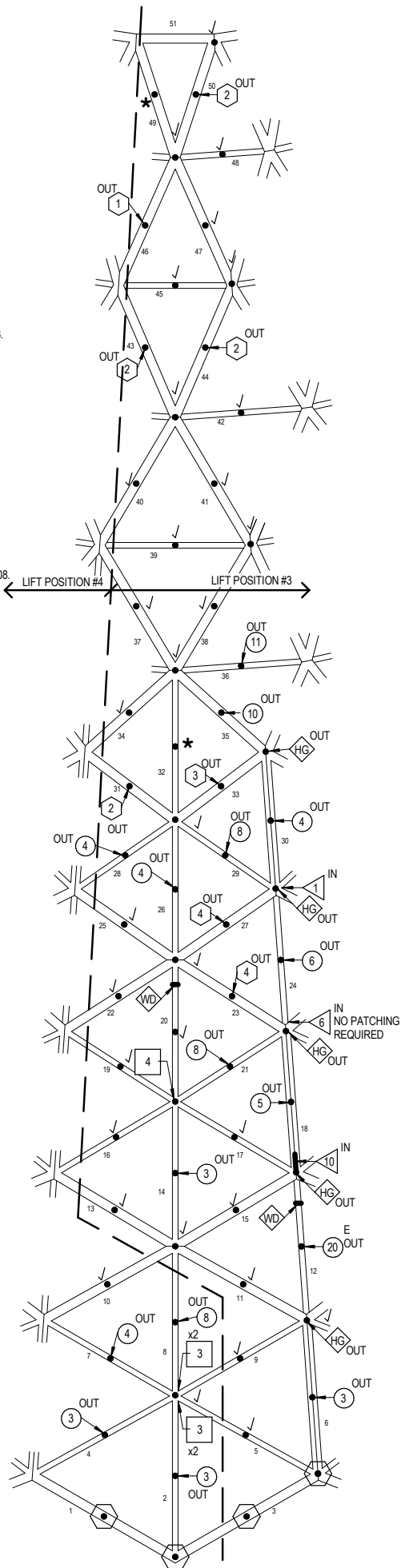
T110

D12



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE



1 SECTOR K
NTS

TROPICAL DOME

GRÄEF

PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR K FIELD NOTES

T111

D13

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- IN 3: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- OUT 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
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- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

1 SECTOR L

NTS

TROPICAL DOME

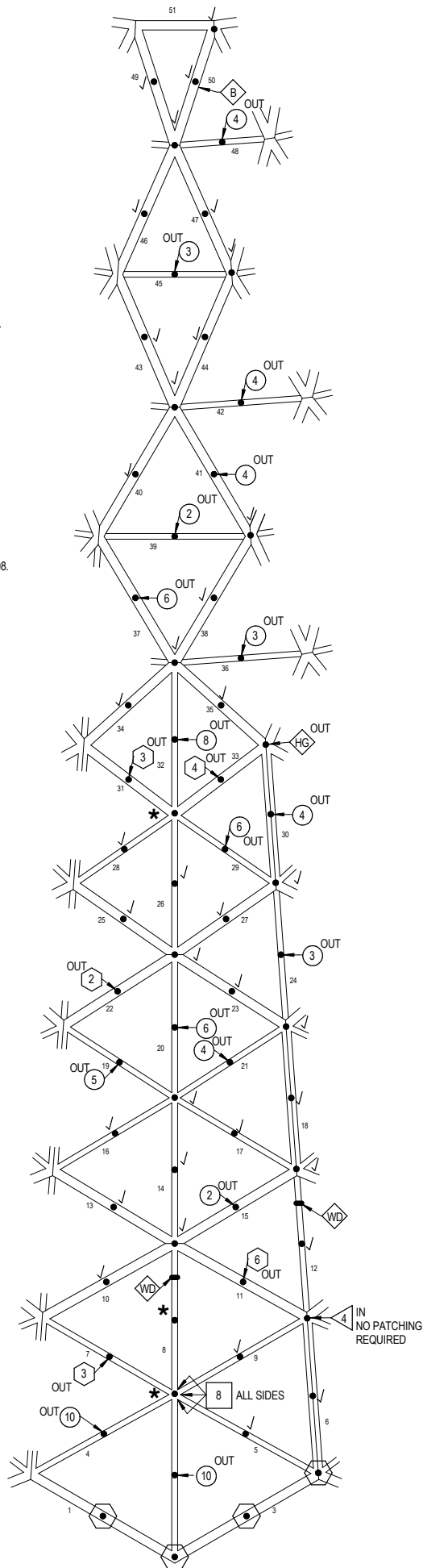
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PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR L FIELD NOTES

T112

D14



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

1 SECTOR M
NTS

TROPICAL DOME

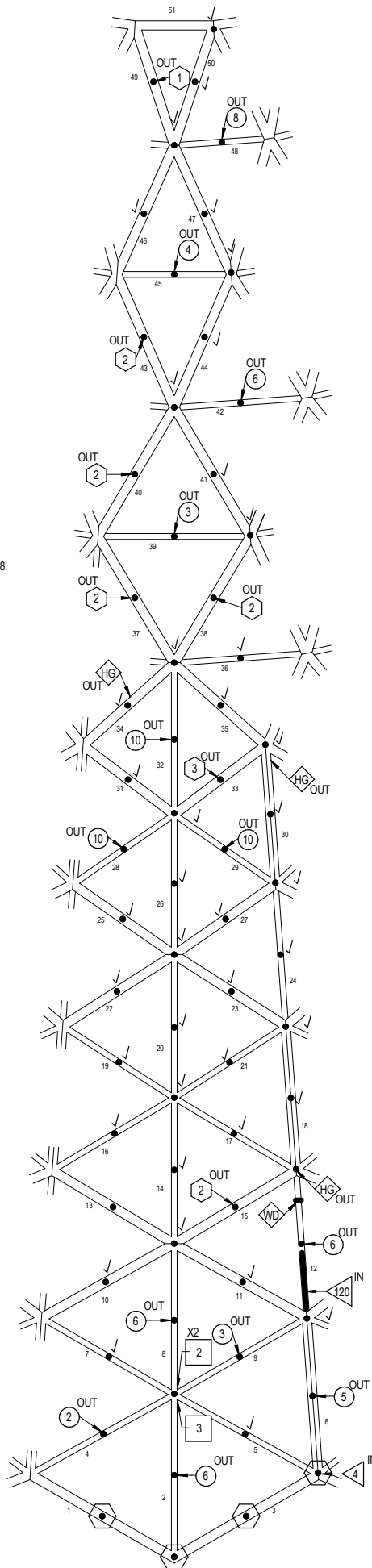
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PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR M FIELD NOTES

T113

D15



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

SECTOR N

NTS

TROPICAL DOME

GRÄEF

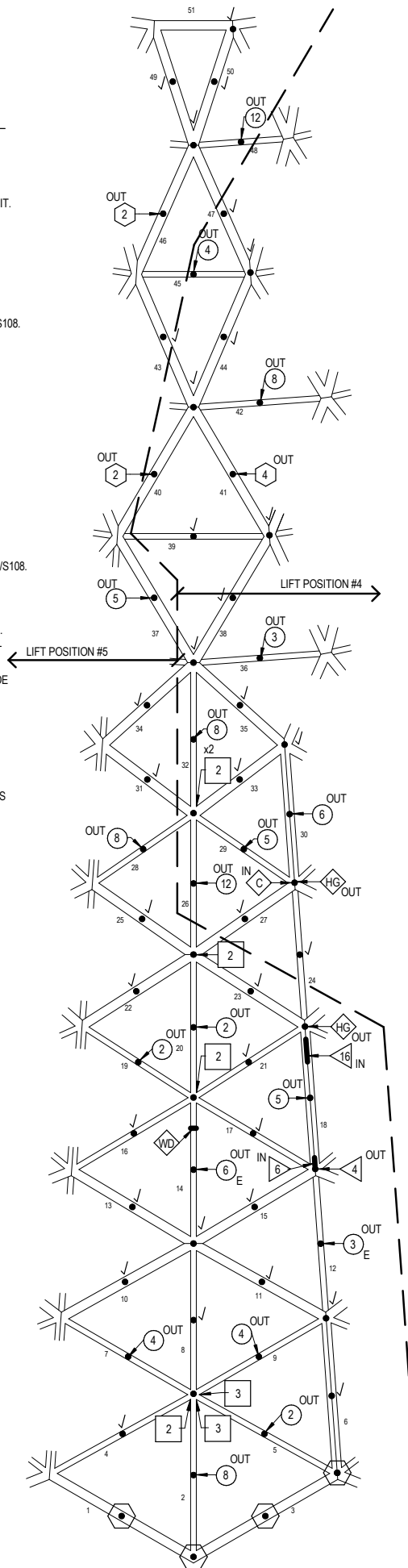
PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR N FIELD NOTES

T114

D16



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

1 SECTOR O

NTS

TROPICAL DOME

GRÄEF

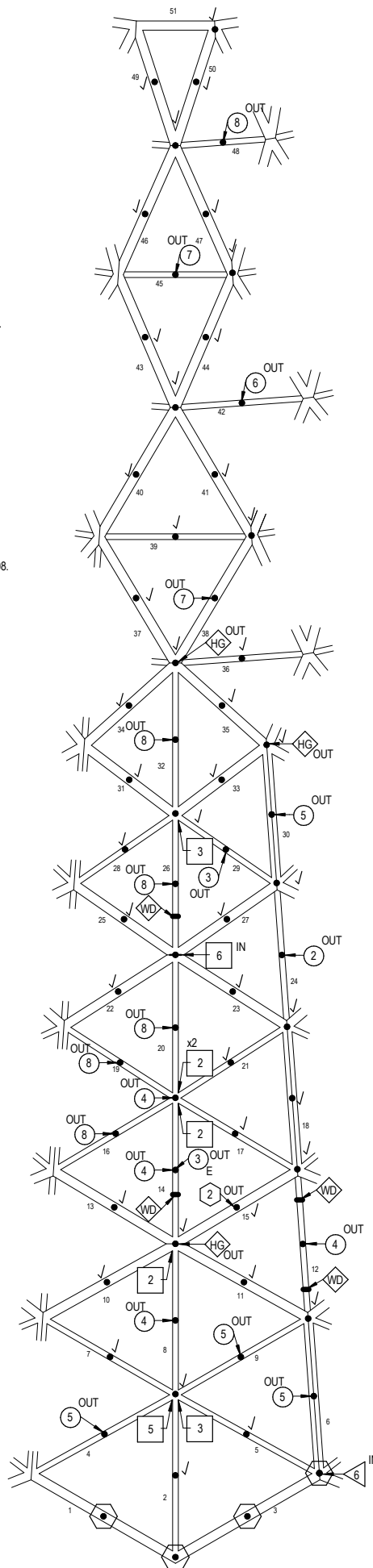
PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR O FIELD NOTES

T115

D17



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

SECTOR P

NTS

TROPICAL DOME

GRÄEF

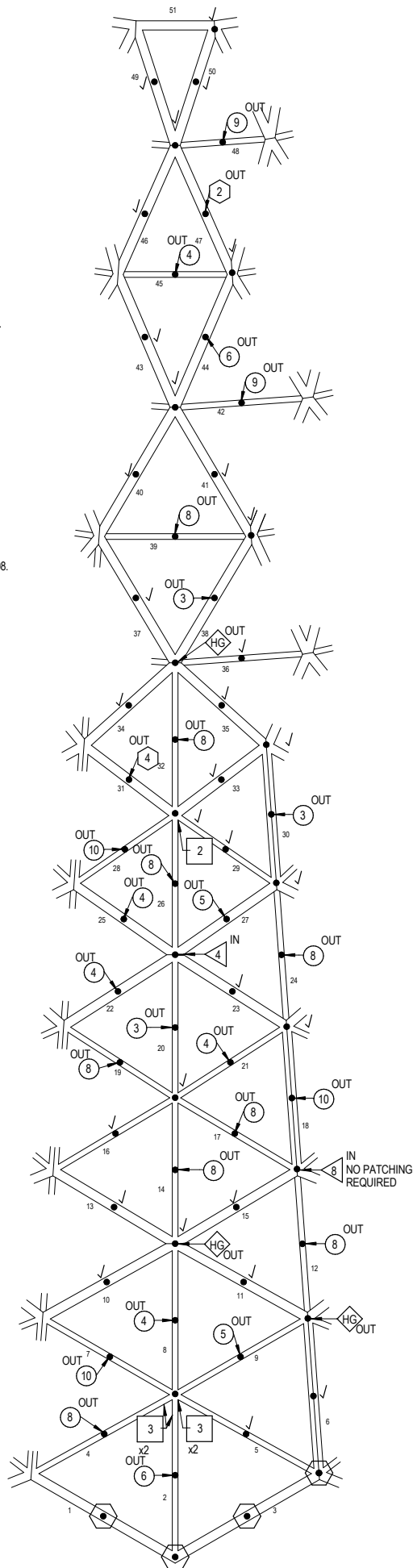
PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR P FIELD NOTES

T116

D18



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

SECTOR Q

NTS

TROPICAL DOME

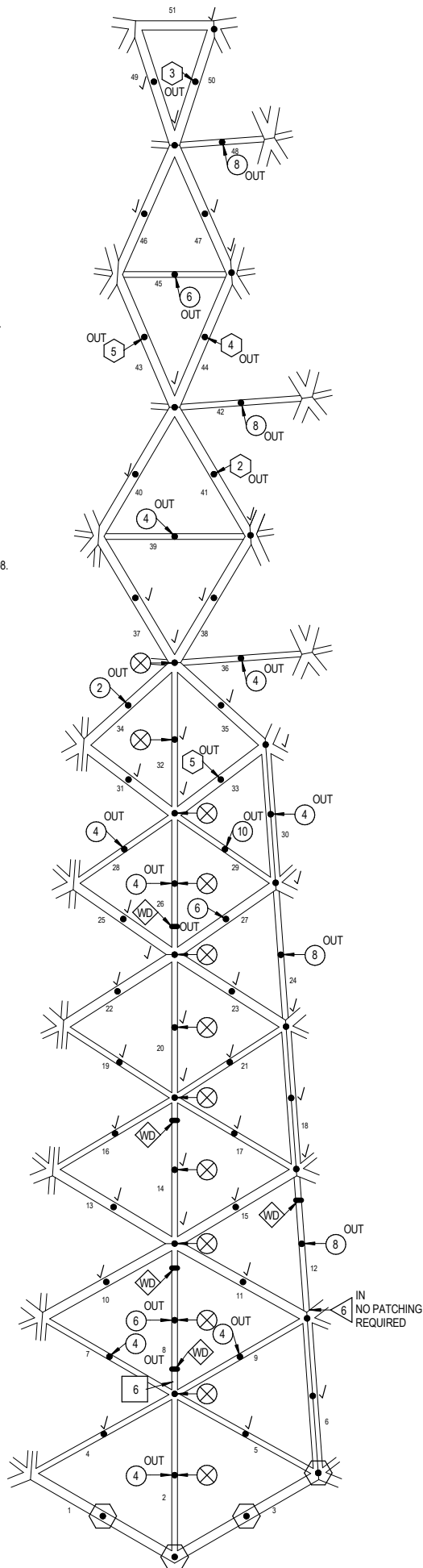
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PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR Q FIELD NOTES

T117

D19



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

1 SECTOR R

NTS

TROPICAL DOME

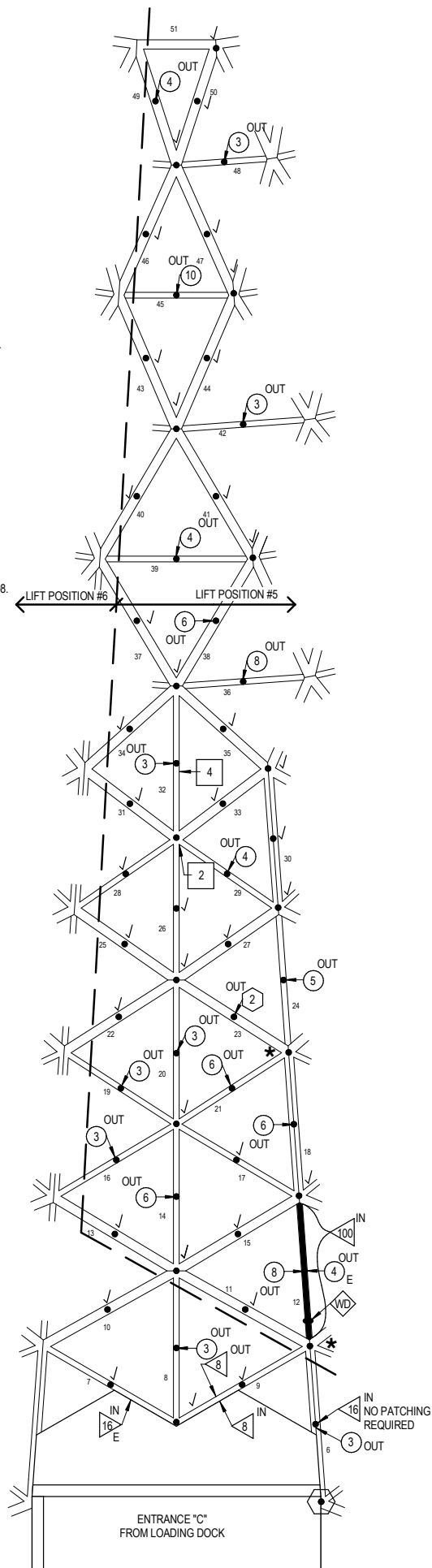
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PROJECT NUMBER: 2013-0167.01
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SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR R FIELD NOTES

T118

D20



LEGEND

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- 3 IN: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
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- 4 OUT: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

SECTOR S

NTS

TROPICAL DOME

GRÄEF

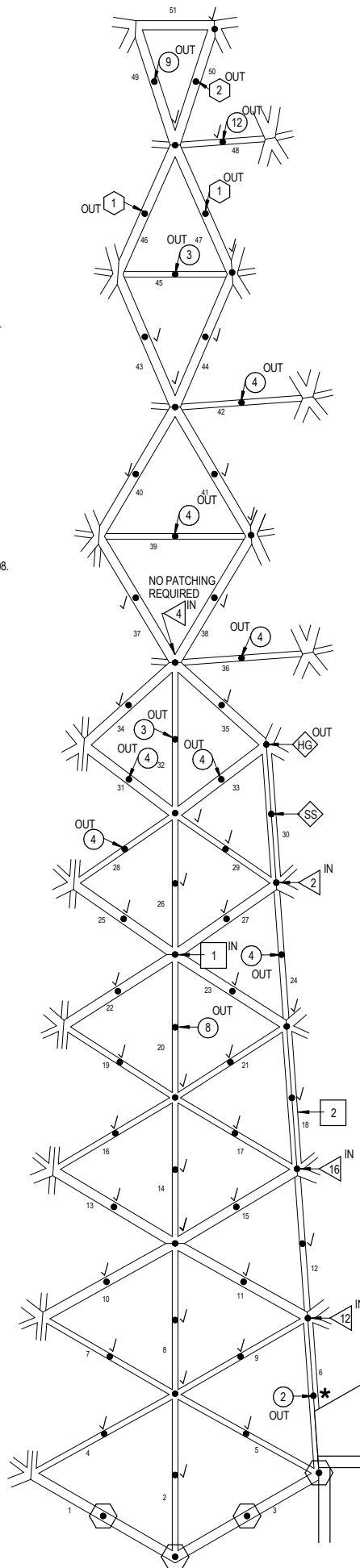
PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR S FIELD NOTES

T119

D21



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
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- NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

1

SECTOR T

NTS

TROPICAL DOME

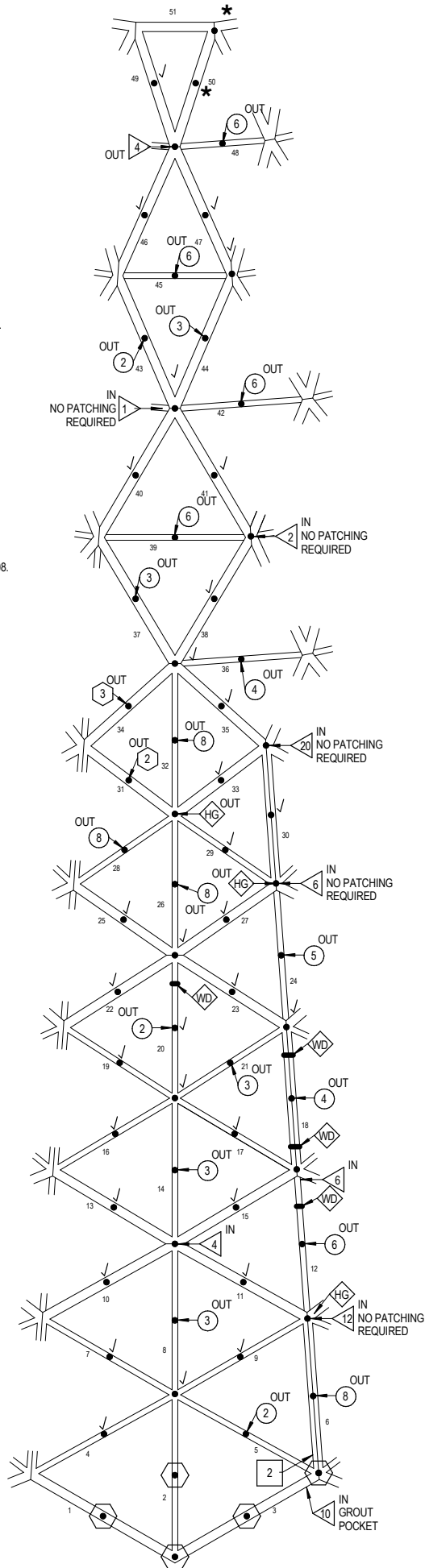
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PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR T FIELD NOTES

T120

D22



LEGEND

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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE

1 SECTOR U

NTS

TROPICAL DOME

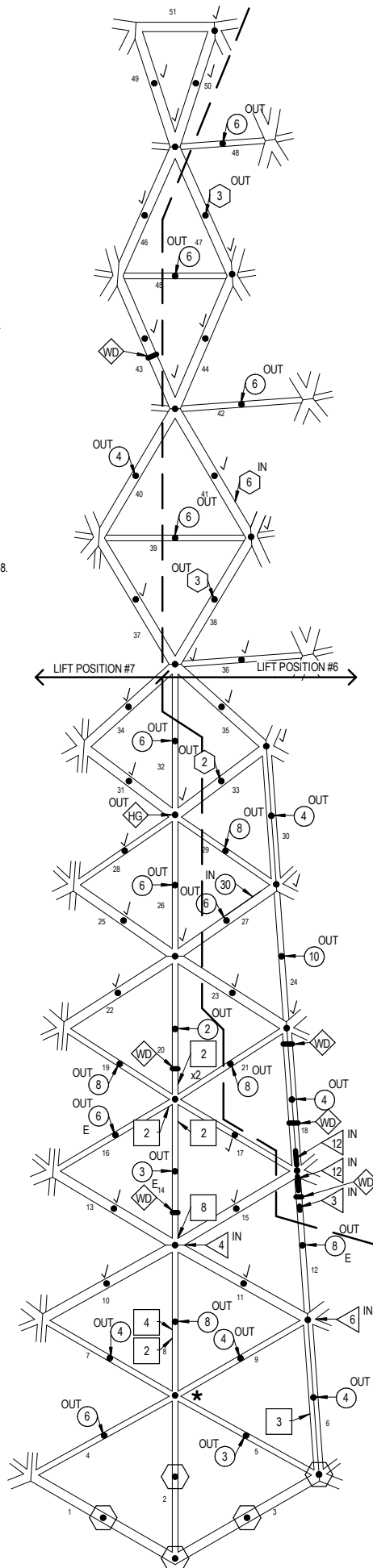
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PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR U FIELD NOTES

T121

D23



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- * PAINT OUTSIDE FACE OF PLATE

1 SECTOR V

NTS

TROPICAL DOME

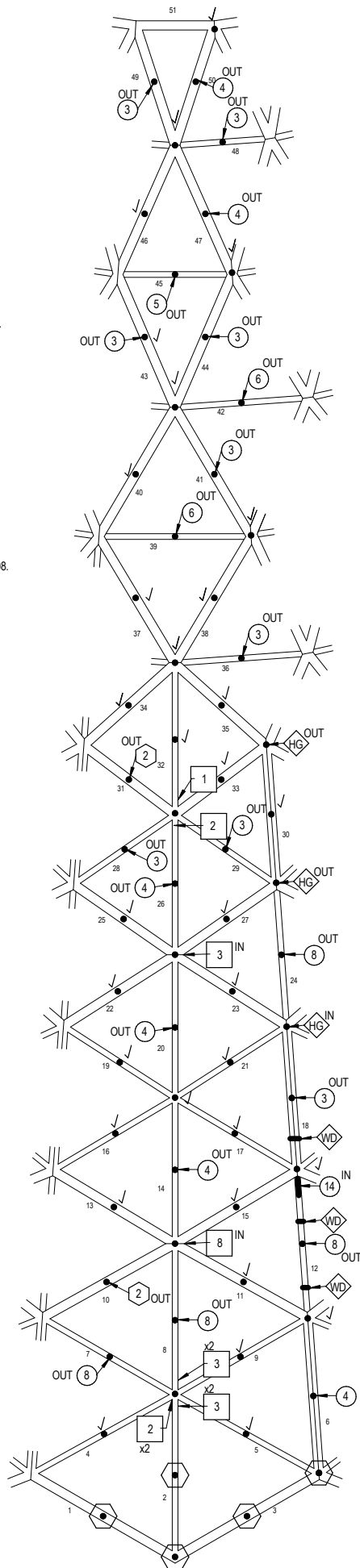
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PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR V FIELD NOTES

T122

D24



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

1

SECTOR W

NTS

TROPICAL DOME

GRÄEF

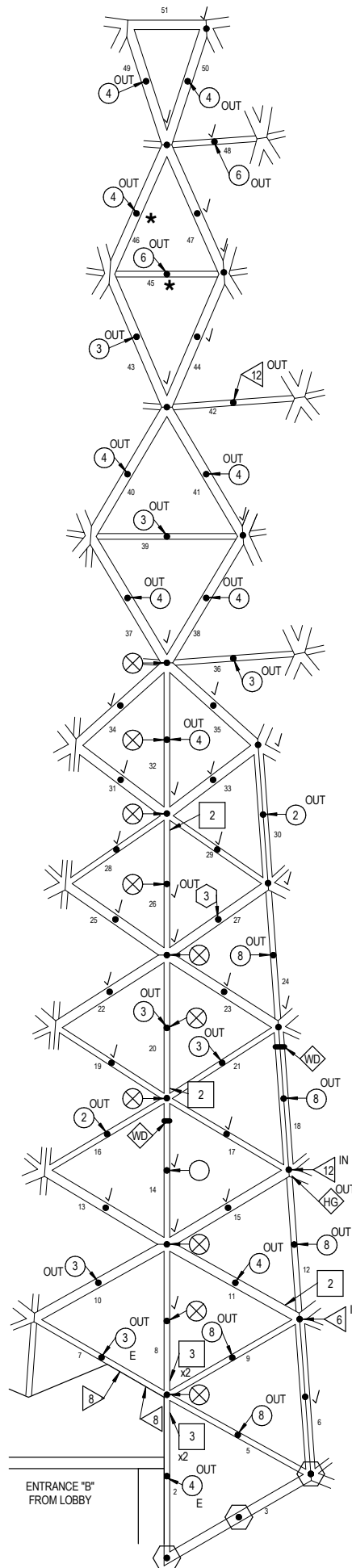
PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR W FIELD NOTES

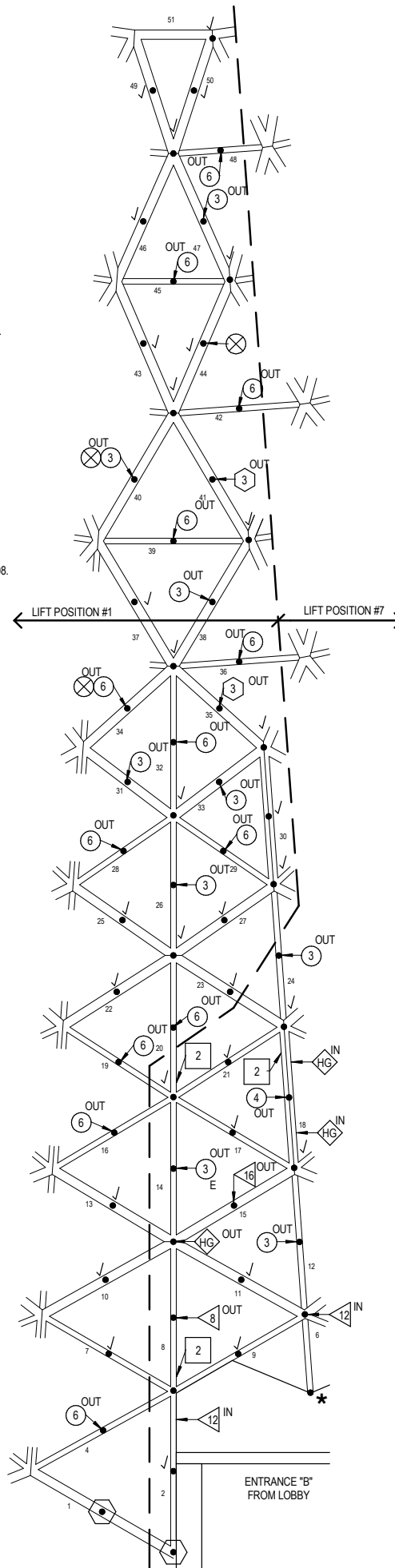
T123

D25



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE



1 SECTOR X

NTS

TROPICAL DOME

GRÄEF

PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: TROPICAL DOME SECTOR X FIELD NOTES

T124

D26

LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE

1 SECTOR Y

NTS

TROPICAL DOME

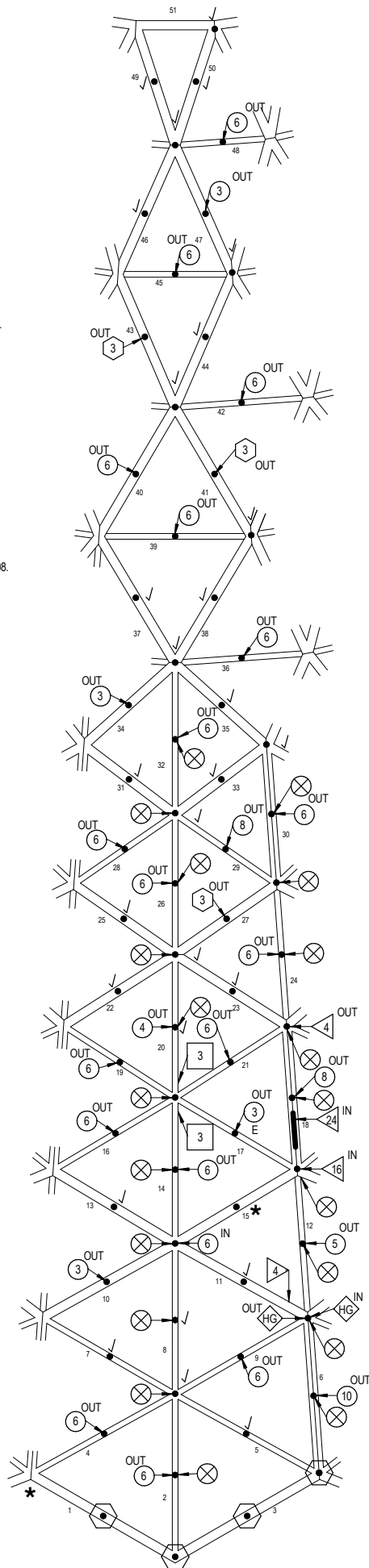
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PROJECT NUMBER: 2013-0167.01
DATE: 02-07-2014
SCALE: N.T.S.

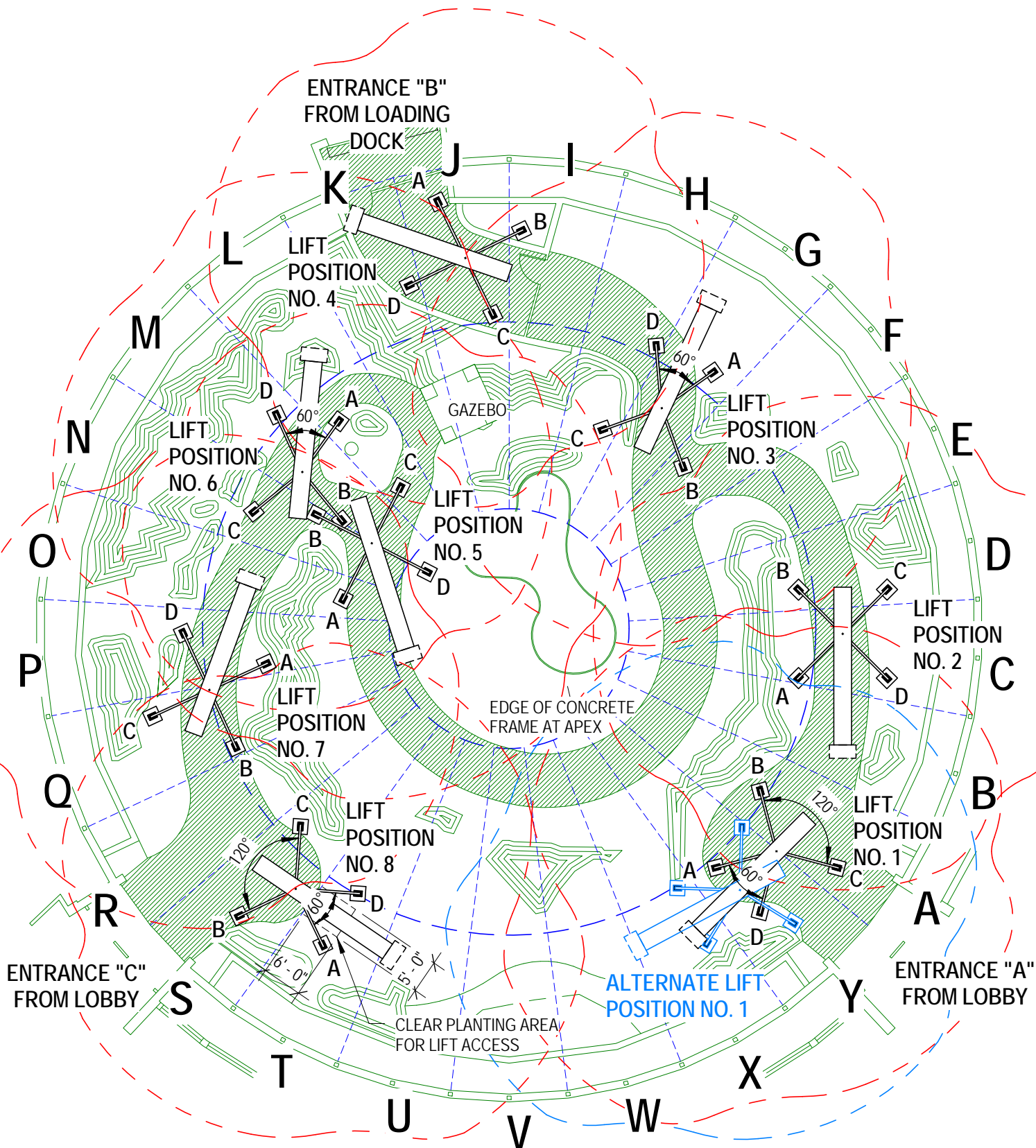
PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: TROPICAL DOME SECTOR Y FIELD NOTES

T125

D27



DESERT DOME INSPECTION NOTES



POSITIONS 1, 2, 3 AND 4 WERE ACCESSED FROM ENTRANCE A.
ALL OTHERS WERE ACCESSED FROM ENTRANCE C.



PROJECT NUMBER: 2013-0167.02
DATE: 01/21/14
SCALE: 1" = 20'-0"

PROJECT TITLE: MITCHELL PARK
HORTICULTURAL
CONSERVATORY
SHEET TITLE:

DD

CONCRETE FRAME
EVALUATIONS & REPAIRS

Desert Dome - Concrete Frame Evaluation Summary

Segment	Total Number of Hubs	Number of Hubs Reviewed	Number of Hubs Inaccessible at Base	Number of Locations with Spalled Concrete	Number of Locations with Spalled Grout	Number of Locations with Exposed Rebar	Notes
A	65	63	2	32	1	1	
B	68	64	4	39	1	3	1 Water Diverter Installed
C	68	64	4	32	0	1	3 Water Diverters Installed
D	68	64	4	40	0	2	1 Water Diverter Installed
E	68	64	4	34	0	0	2 Water Diverters Installed
F	68	64	4	39	0	3	1 Water Diverter Installed
G	68	64	4	30	0	0	1 Water Diverter Installed
H	68	64	4	34	0	5	
I	68	64	4	33	0	6	1 Water Diverter Installed
J	67	64	3	28	2	3	
K	67	64	3	33	2	4	2 Water Diverters Installed
L	68	64	4	32	1	2	4 Water Diverters Installed
M	68	63	5	28	0	0	5 Water Diverters Installed
N	68	63	5	32	1	0	2 Water Diverters Installed
O	68	63	5	31	3	1	5 Water Diverters Installed
P	68	63	5	31	0	6	5 Water Diverters Installed
Q	68	64	4	31	0	0	1 Water Diverter Installed
R	66	63	3	36	1	0	
S	65	63	2	31	0	0	2 Water Diverters Installed
T	68	64	4	32	0	8	3 Water Diverters Installed
U	68	64	4	38	0	3	2 Water Diverters Installed
V	68	64	4	34	0	0	2 Water Diverters Installed
W	68	64	4	35	1	0	4 Water Diverters Installed 1 SS Clamp Installed
X	68	64	4	33	2	0	2 Water Diverters Installed
Y	66	63	3	37	2	3	1 Water Diverter Installed
Totals	1688	1592	96	835	17	51	
		94.3% of Total	5.7% of Total	52.4% of Total Reviewed	1.1% of Total Reviewed	3.2% of Total Reviewed	

LEGEND

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- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1

SECTOR A

NTS

DESERT DOME

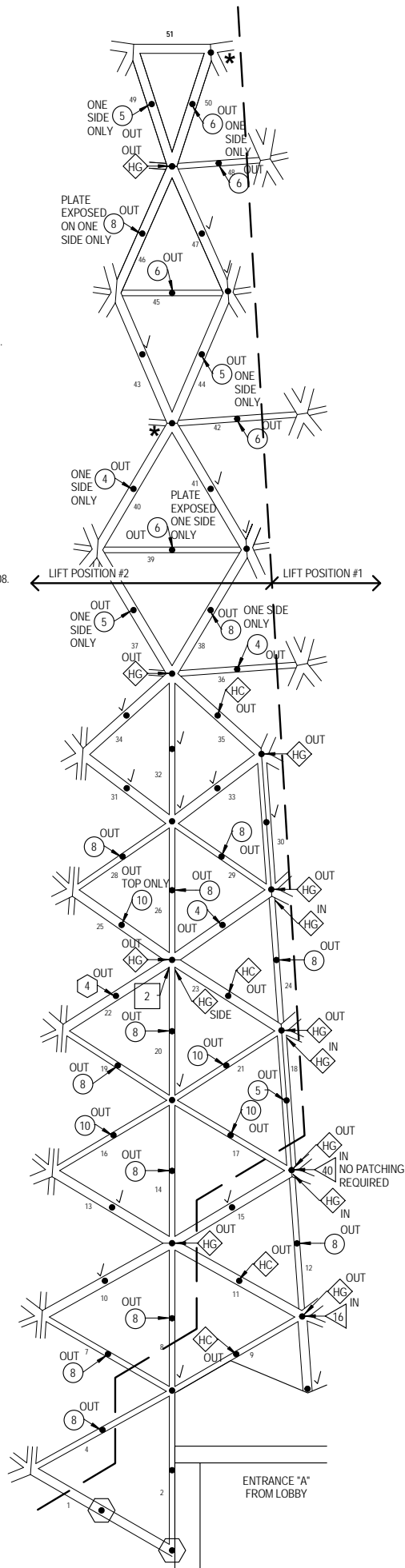
GRaEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR A FIELD NOTES

D101

D30



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

1

SECTOR B

NTS

DESERT DOME

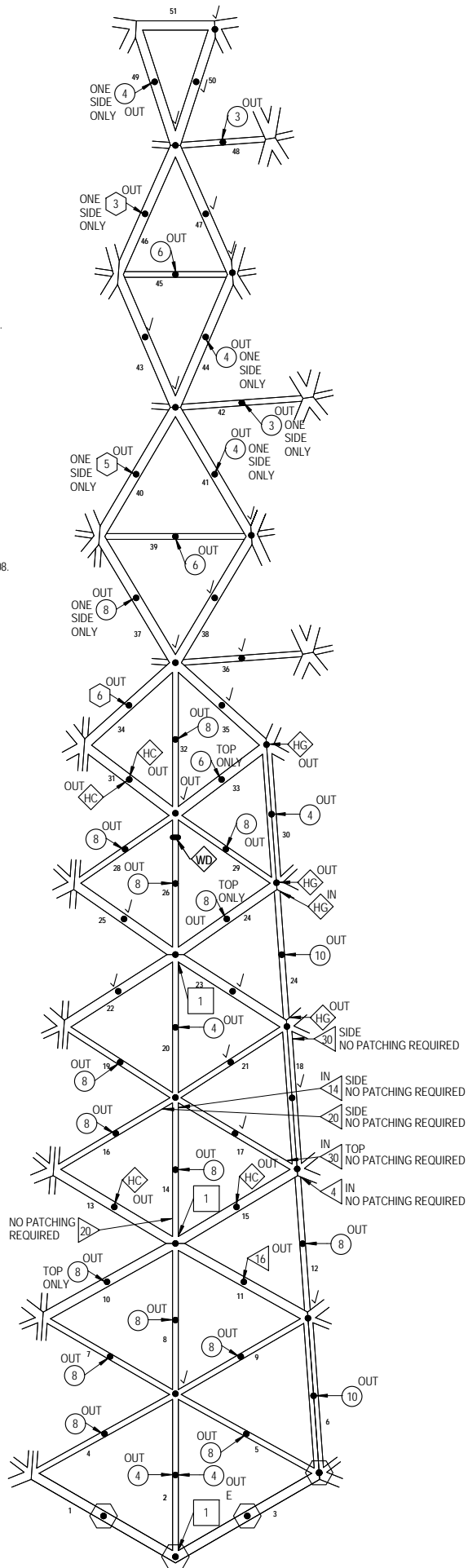
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR B FIELD NOTES

D102

D31



NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.

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OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED
PER DETAIL 2/S108, 4/S108 OR 5/S108.

 NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.

NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.

NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.

NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.

* PAINT OUTSIDE FACE OF PLATE



HOLE IN GLASS TO BE SEALED



GRÄEF

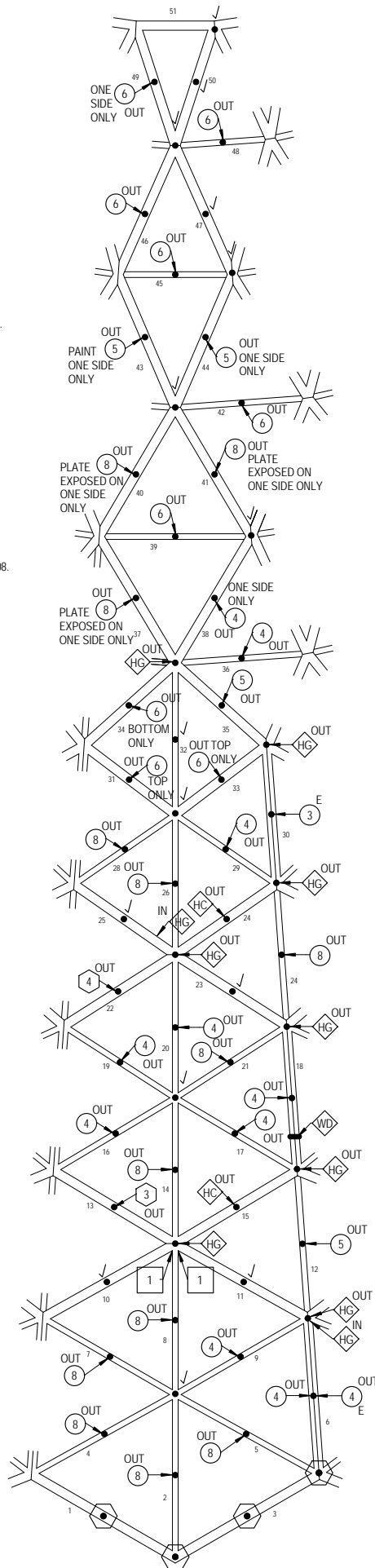
PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR C FIELD NOTES

D32

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- 3 IN: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4 OUT: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR D
NTS



DESERT DOME

GRAEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

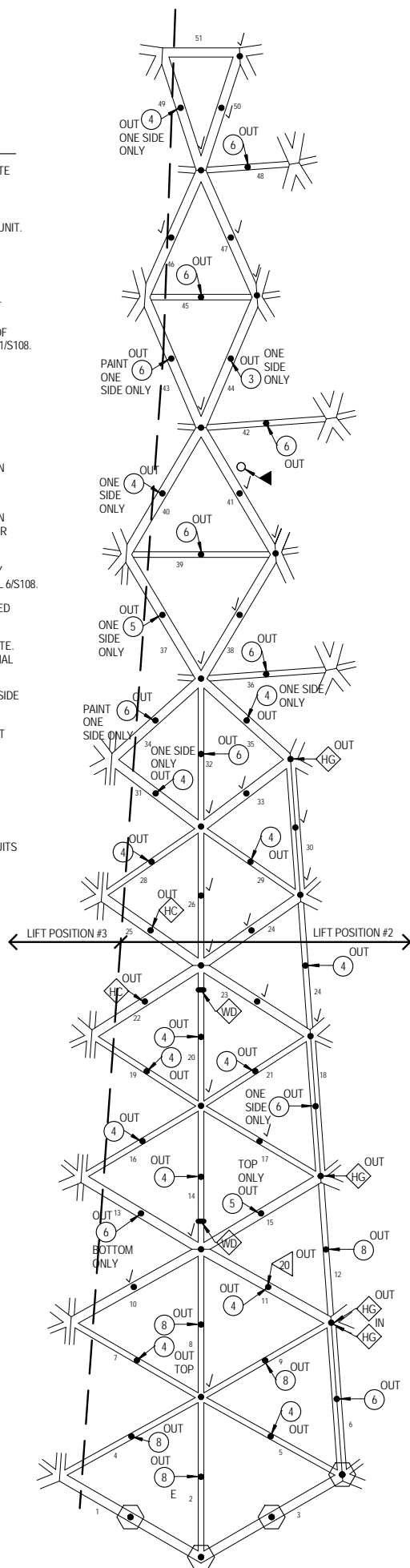
PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR D FIELD NOTES

D104

D33

LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
- 12 CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
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- A NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
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- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED



1 SECTOR E
NTS

DESERT DOME

GRAEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR E FIELD NOTES

D105

D34

LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
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- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
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- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
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- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

1

SECTOR F

NTS

DESERT DOME

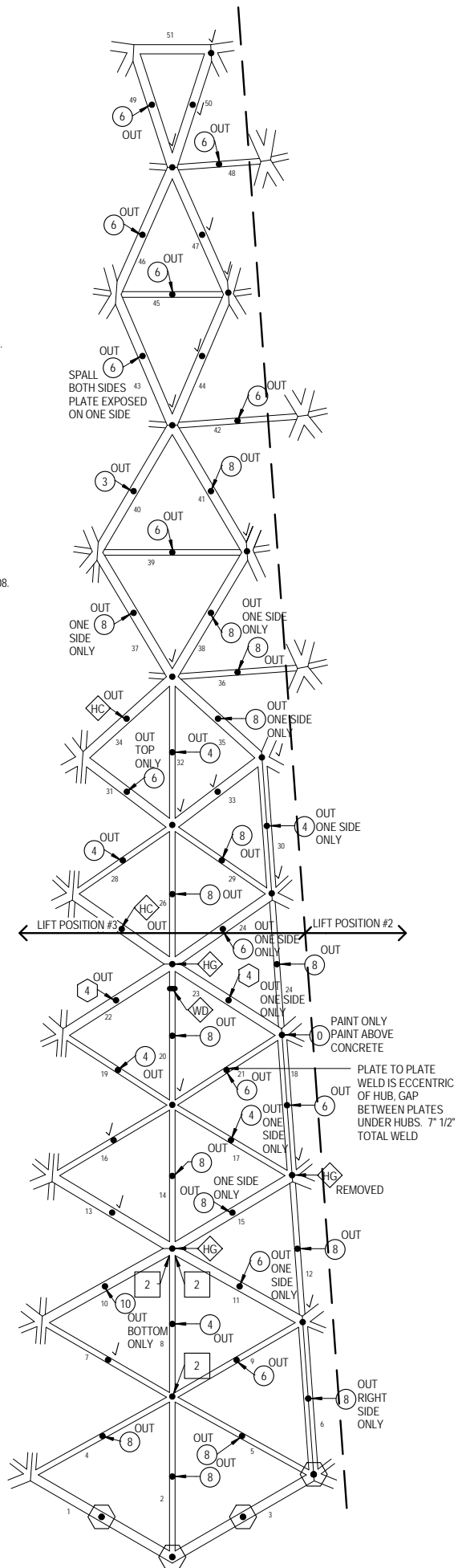
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR F FIELD NOTES

D106

D35



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- IN 3: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- OUT 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
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- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
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- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1

SECTOR G

NTS

DESERT DOME

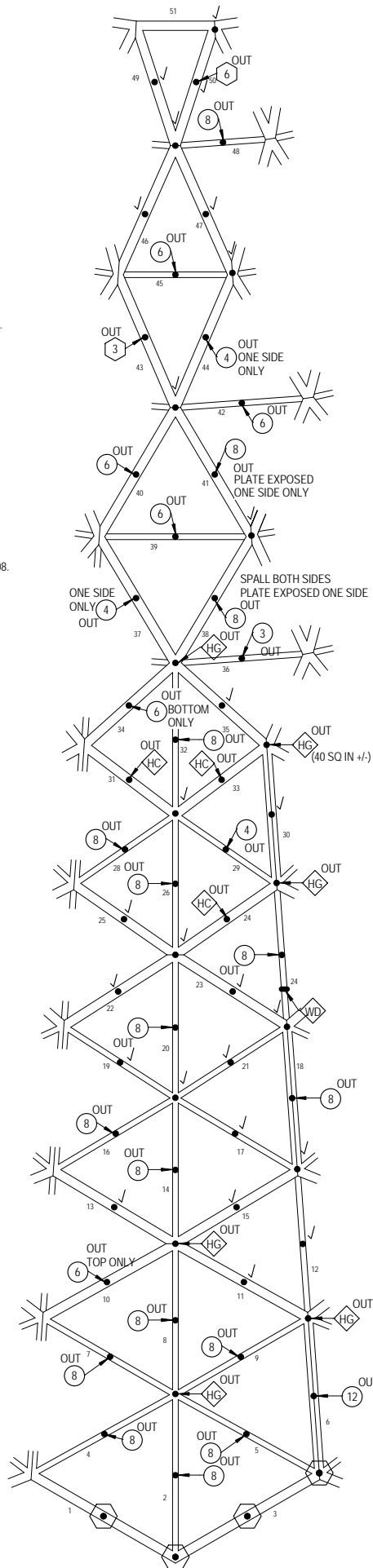
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR G FIELD NOTES

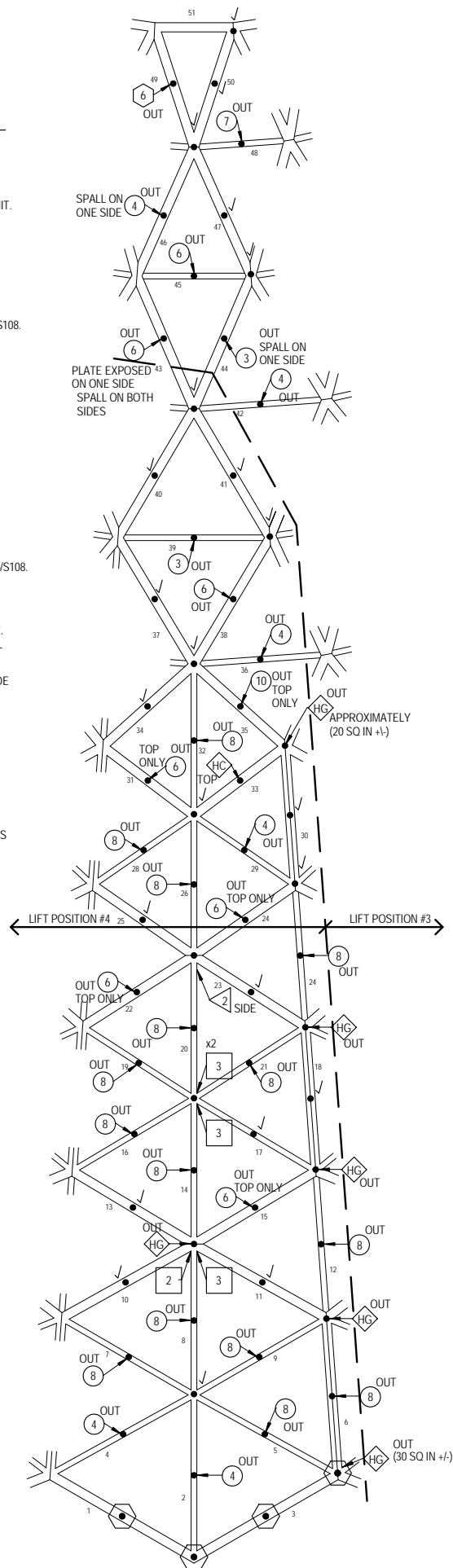
D107

D36



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED



1 SECTOR H
NTS

DESERT DOME

GRaEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR H FIELD NOTES

D108

D37

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR I
NTS

DESERT DOME

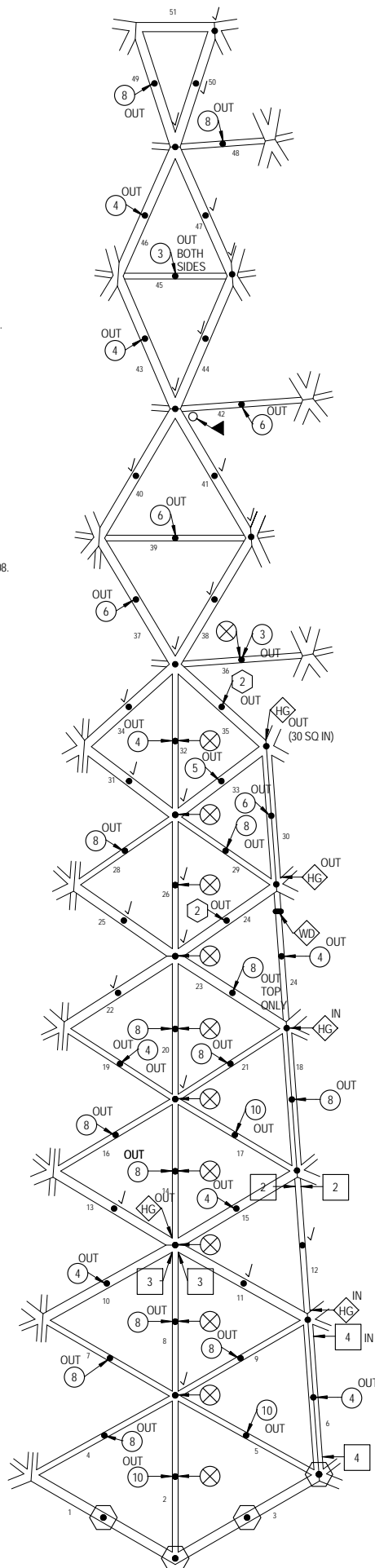
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR I FIELD NOTES

D109

D38



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

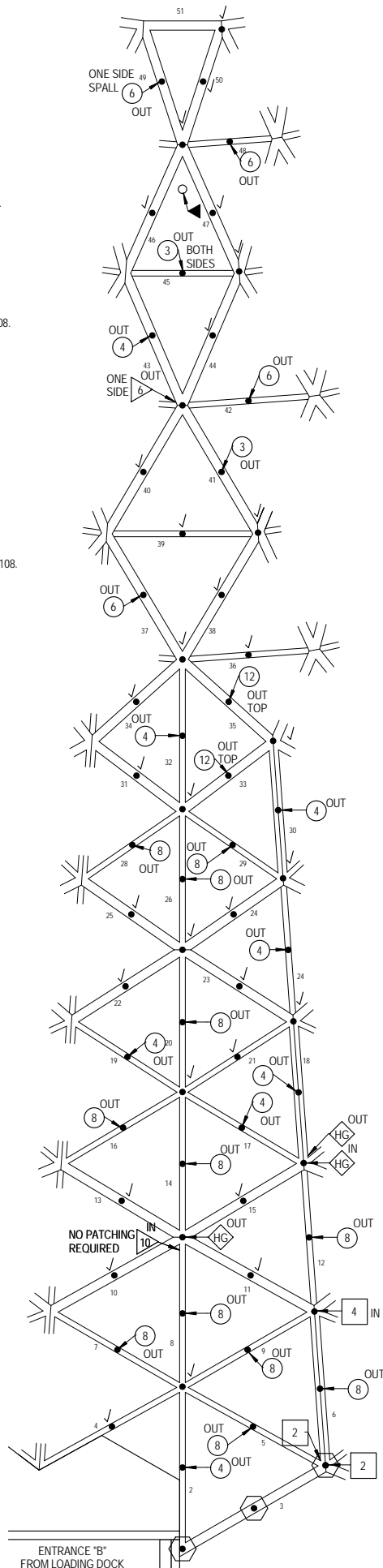
1 SECTOR J
NTS

DESERT DOME

GRÄEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR J FIELD NOTES

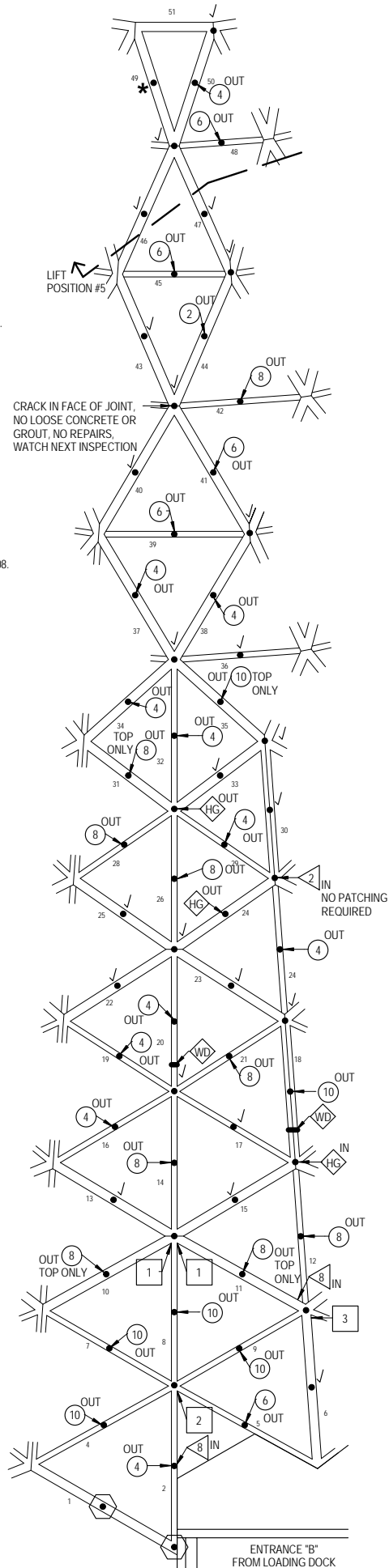


D110

D39

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
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- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED



1 SECTOR K
NTS

DESERT DOME

GRÄEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

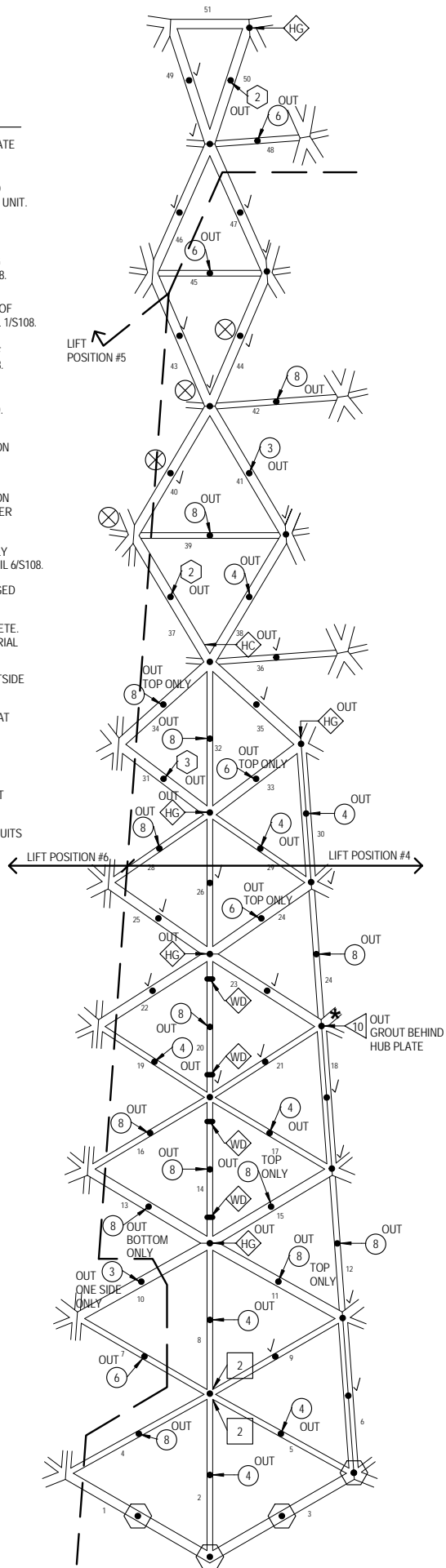
PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR K FIELD NOTES

D111

D40

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED



1 SECTOR L
NTS

DESERT DOME

GRAEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR L FIELD NOTES

D112

D41

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1

SECTOR M

NTS

DESERT DOME

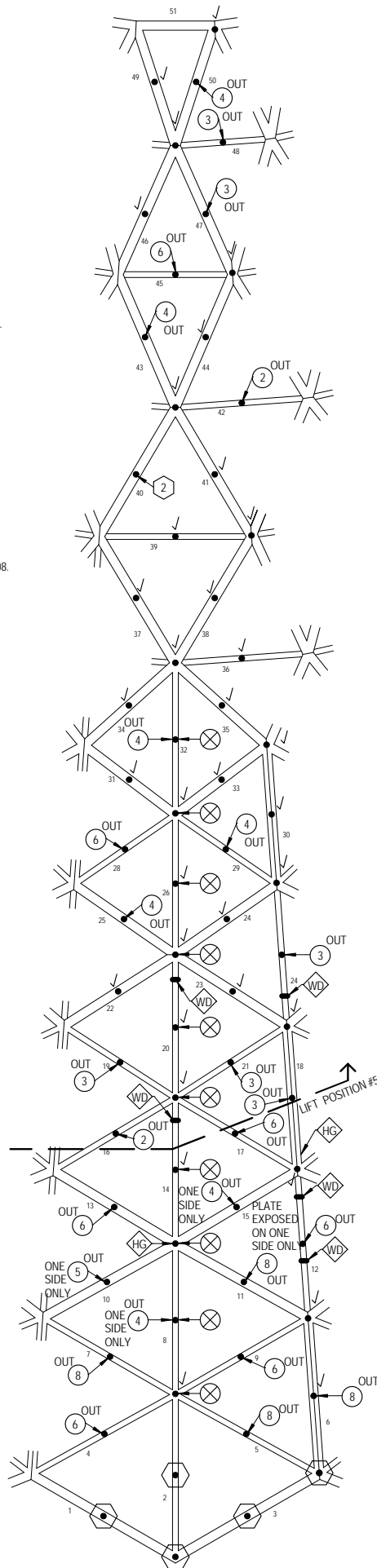
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR M FIELD NOTES

D113

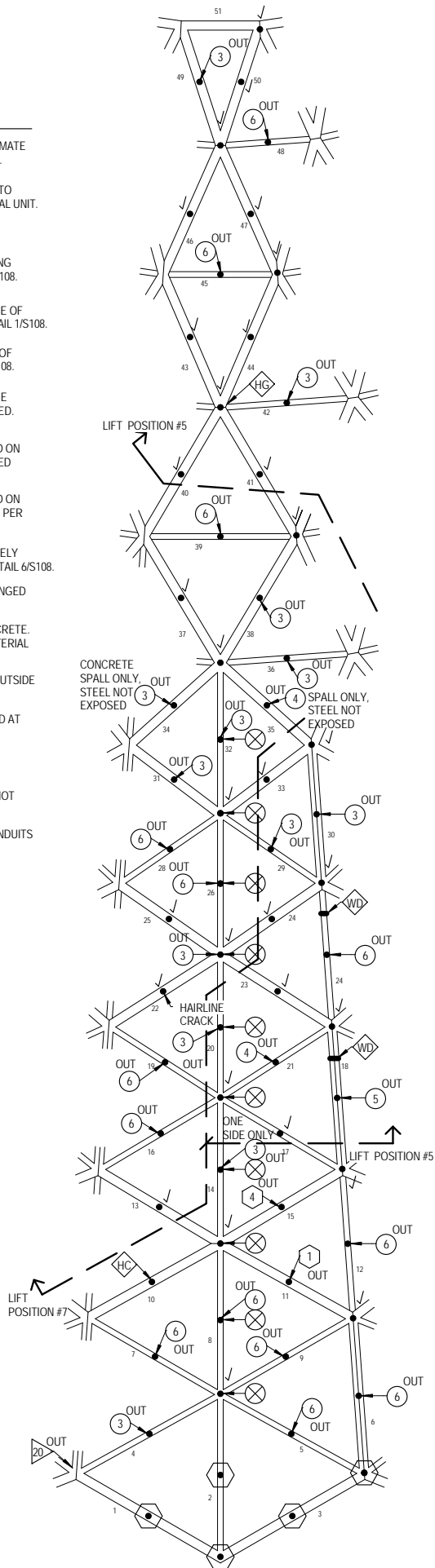
D42



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
- 12 CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- IN 3 CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- OUT 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
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- IN 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

1 SECTOR N
NTS



DESERT DOME

GRAEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR N FIELD NOTES

D114

D43

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- E: EXISTING CONDITION.
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- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- 3 IN: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4 OUT: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR O
NTS

DESERT DOME

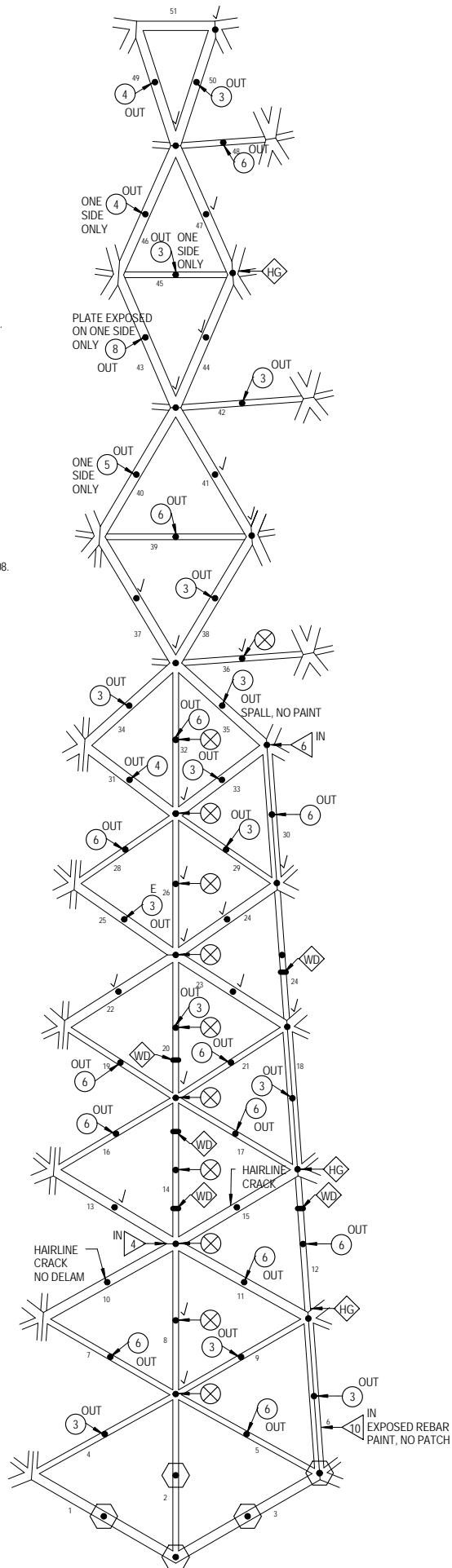
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR O FIELD NOTES

D115

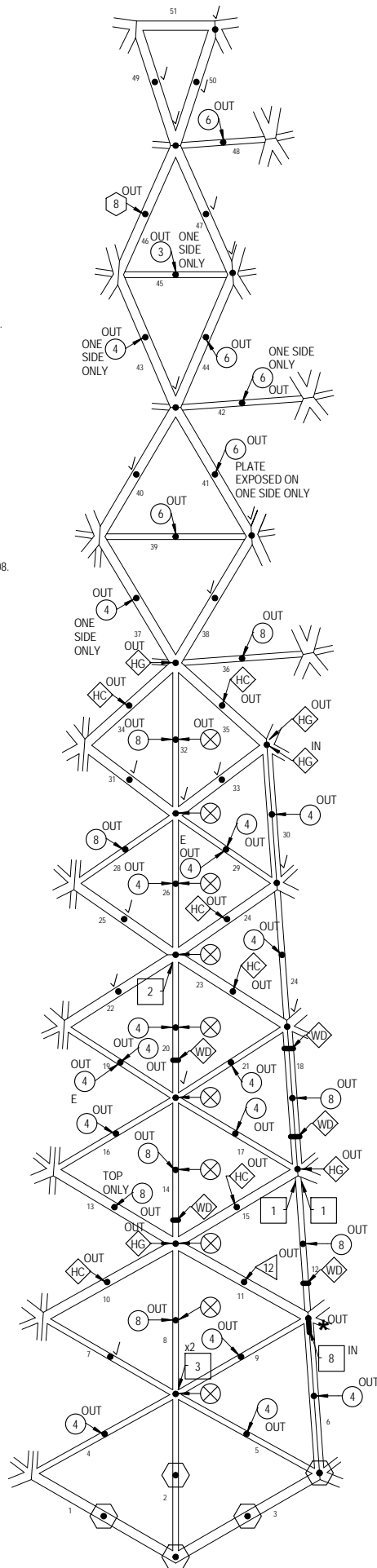
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LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- 3 OUT CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4 OUT CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- 4 IN CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

1 SECTOR P
NTS



DESERT DOME

GRaEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR P FIELD NOTES

D116

D45

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
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- 3 IN: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
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- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR Q
NTS

DESERT DOME

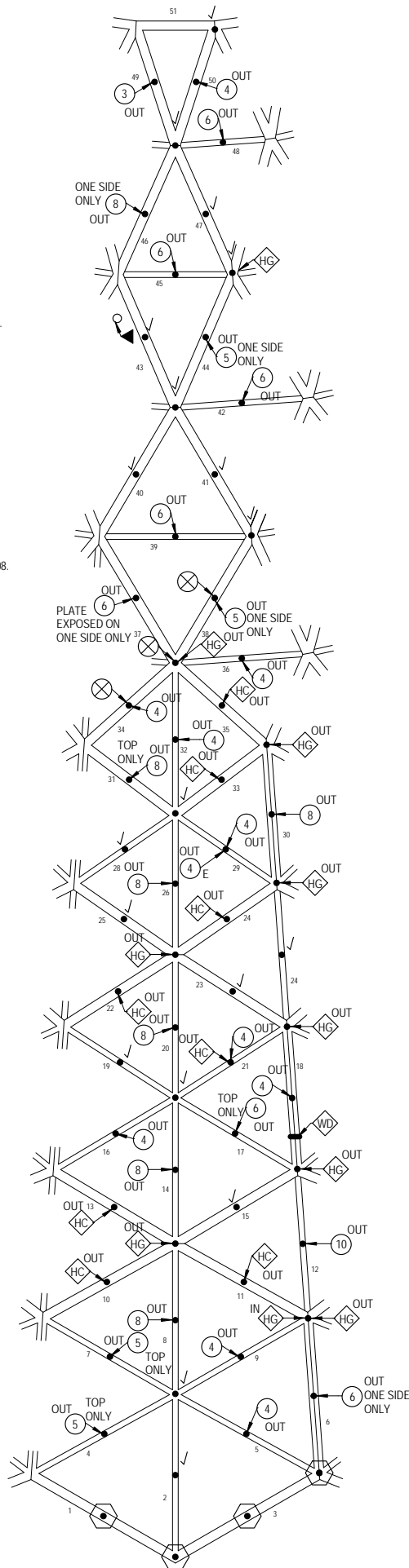
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR Q FIELD NOTES

D117

D46



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- OUT 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
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- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1

SECTOR R

NTS

DESERT DOME

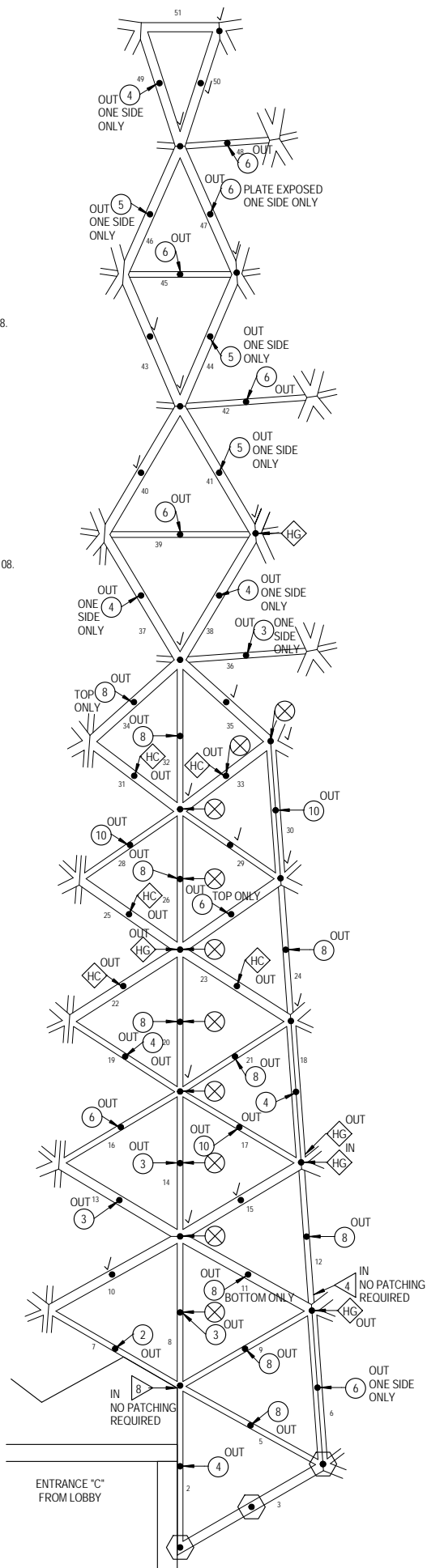
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR R FIELD NOTES

D118

D47



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR S
NTS

DESERT DOME

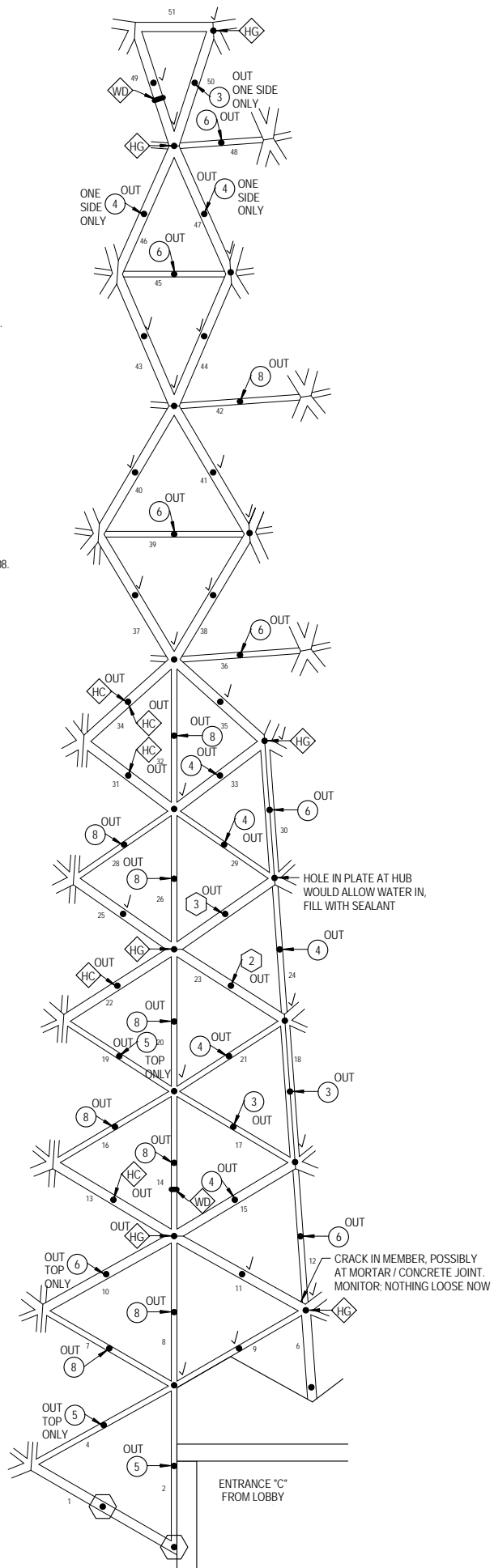
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR S FIELD NOTES

D119

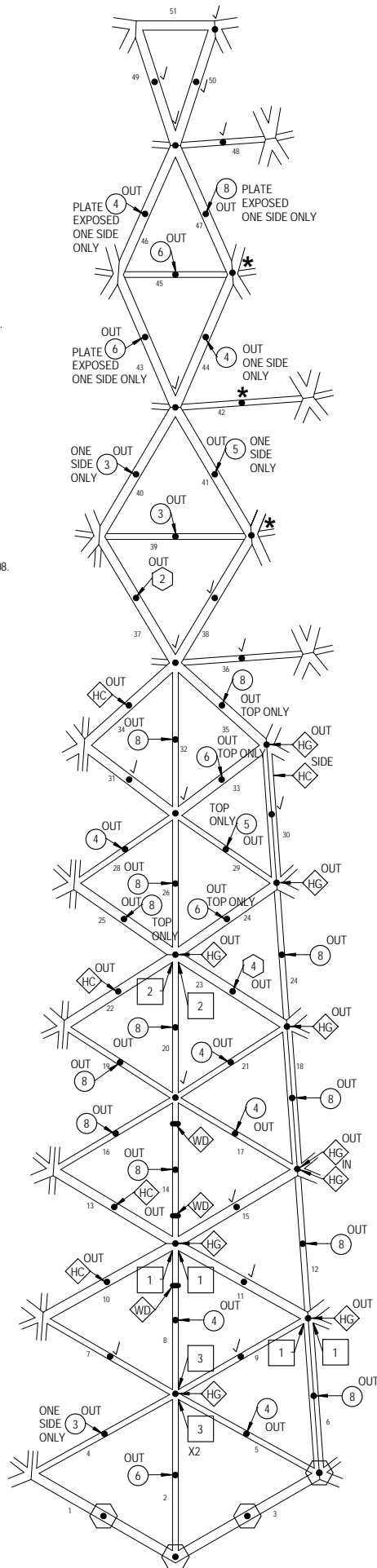
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LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
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- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

1 SECTOR T
NTS



DESERT DOME

GRaEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR T FIELD NOTES

D120

D49

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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1

SECTOR U

NTS

DESERT DOME

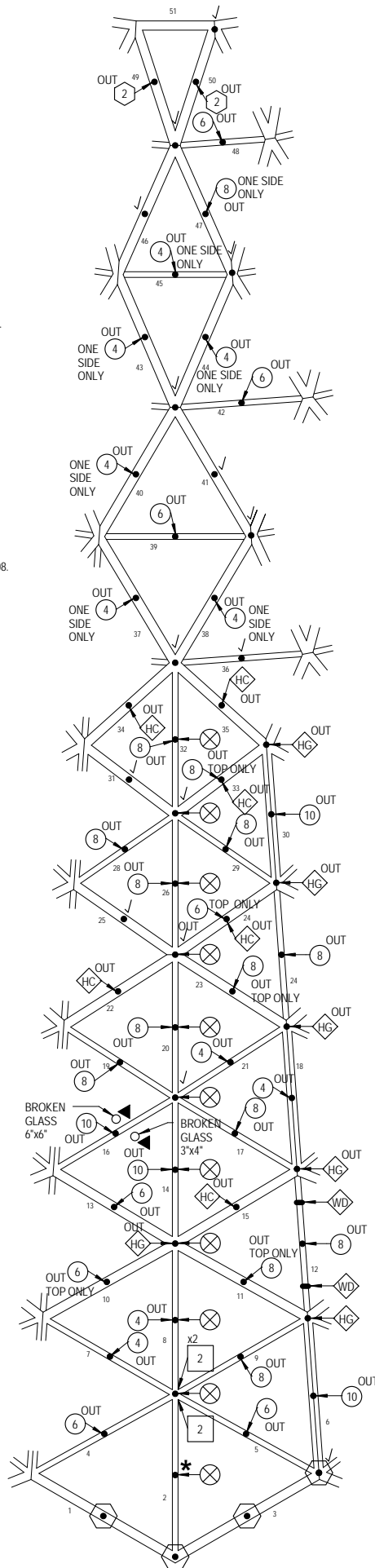
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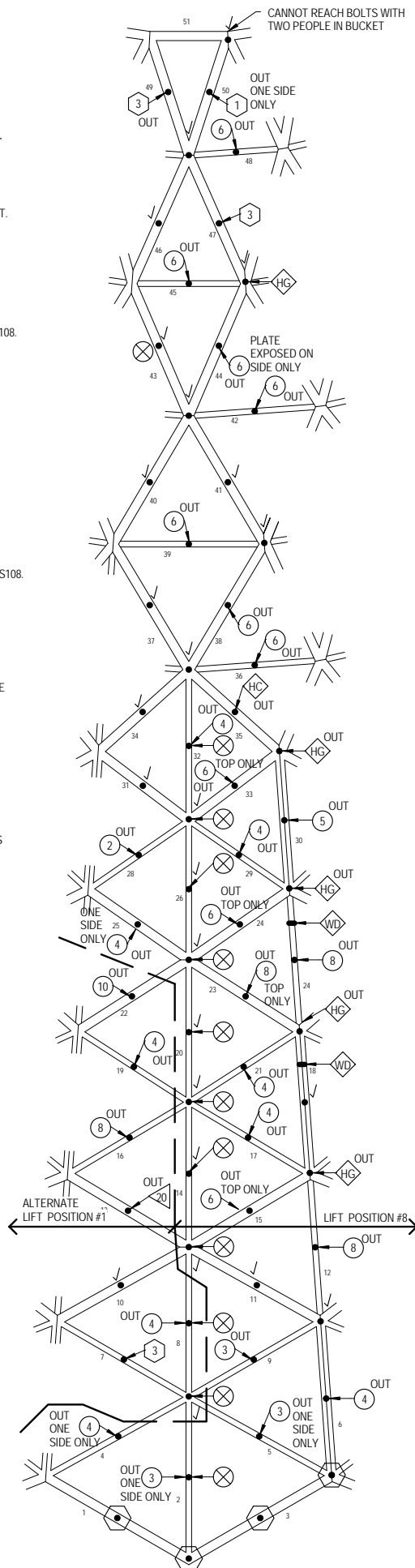
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SHEET TITLE: DESERT DOME SECTOR U FIELD NOTES

D121

D50

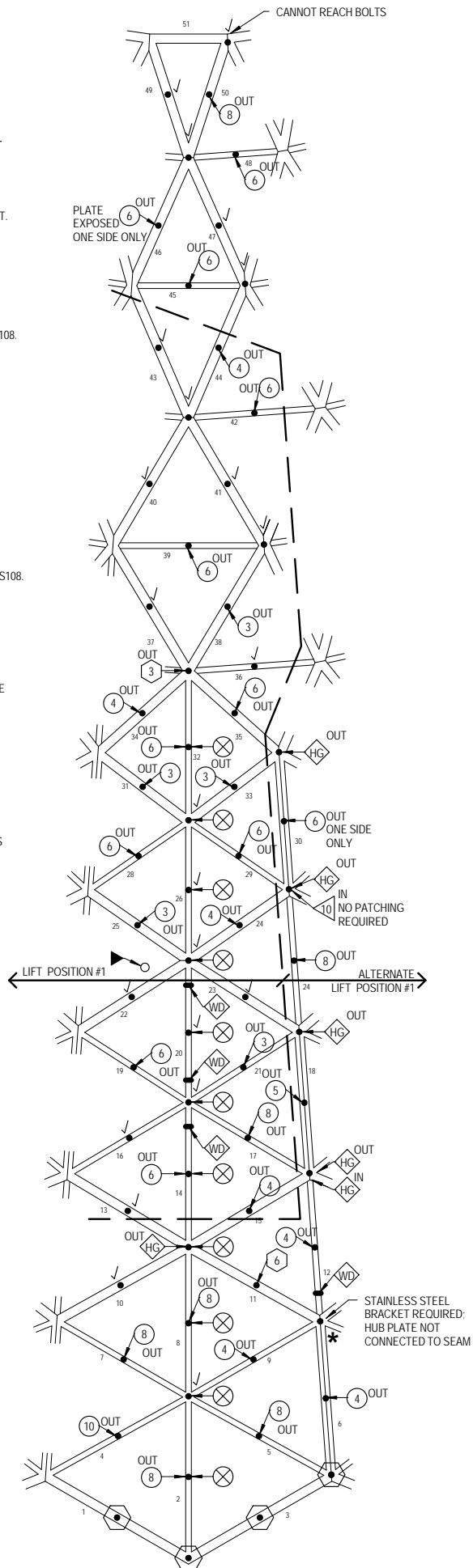


D51



LEGEND

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1 SECTOR W
NTS

DESERT DOME

GRaEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR W FIELD NOTES

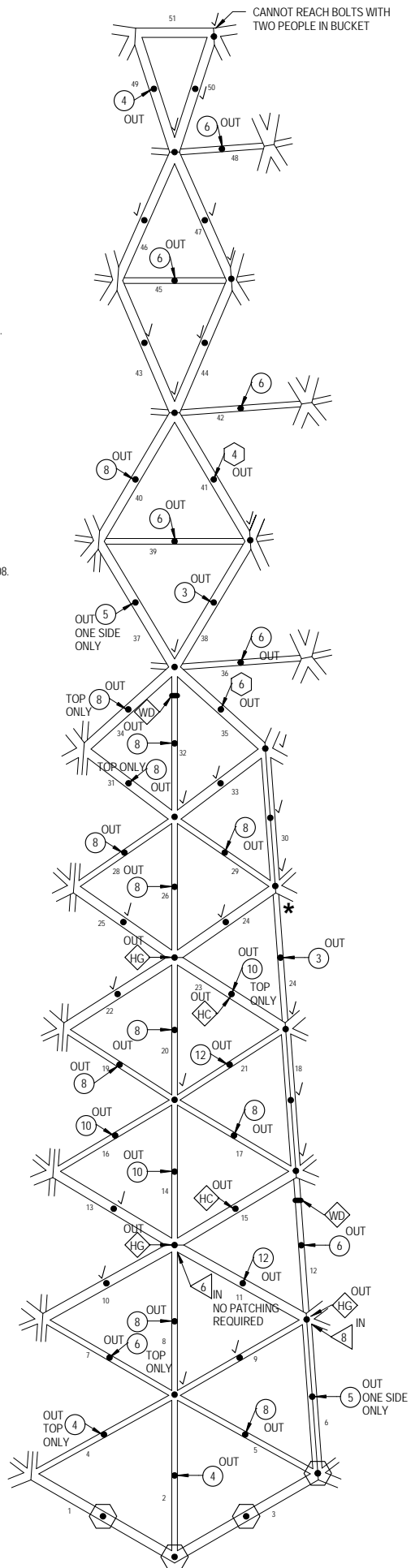
D123

D52

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- 3 IN: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3 OUT: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4 OUT: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- 4 IN: CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR X
NTS



DESERT DOME

GRaEF

PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR X FIELD NOTES

D124

D53

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- OUT 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- IN 3: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- OUT 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- OUT 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- IN 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR Y
NTS

DESERT DOME

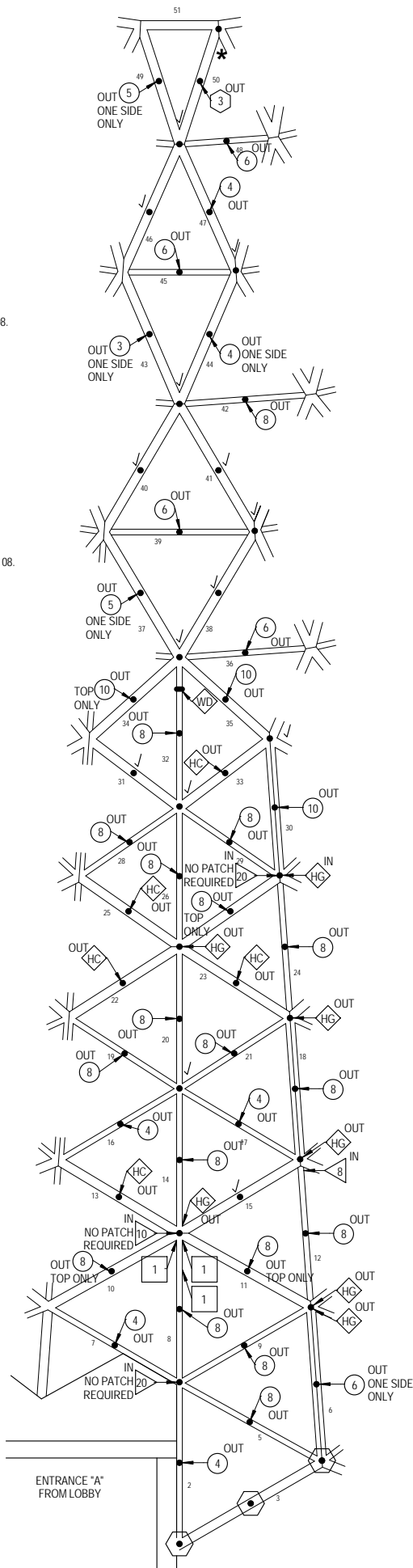
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PROJECT NUMBER: 2013-0167.03
DATE: 03-10-2014
SCALE: NTS

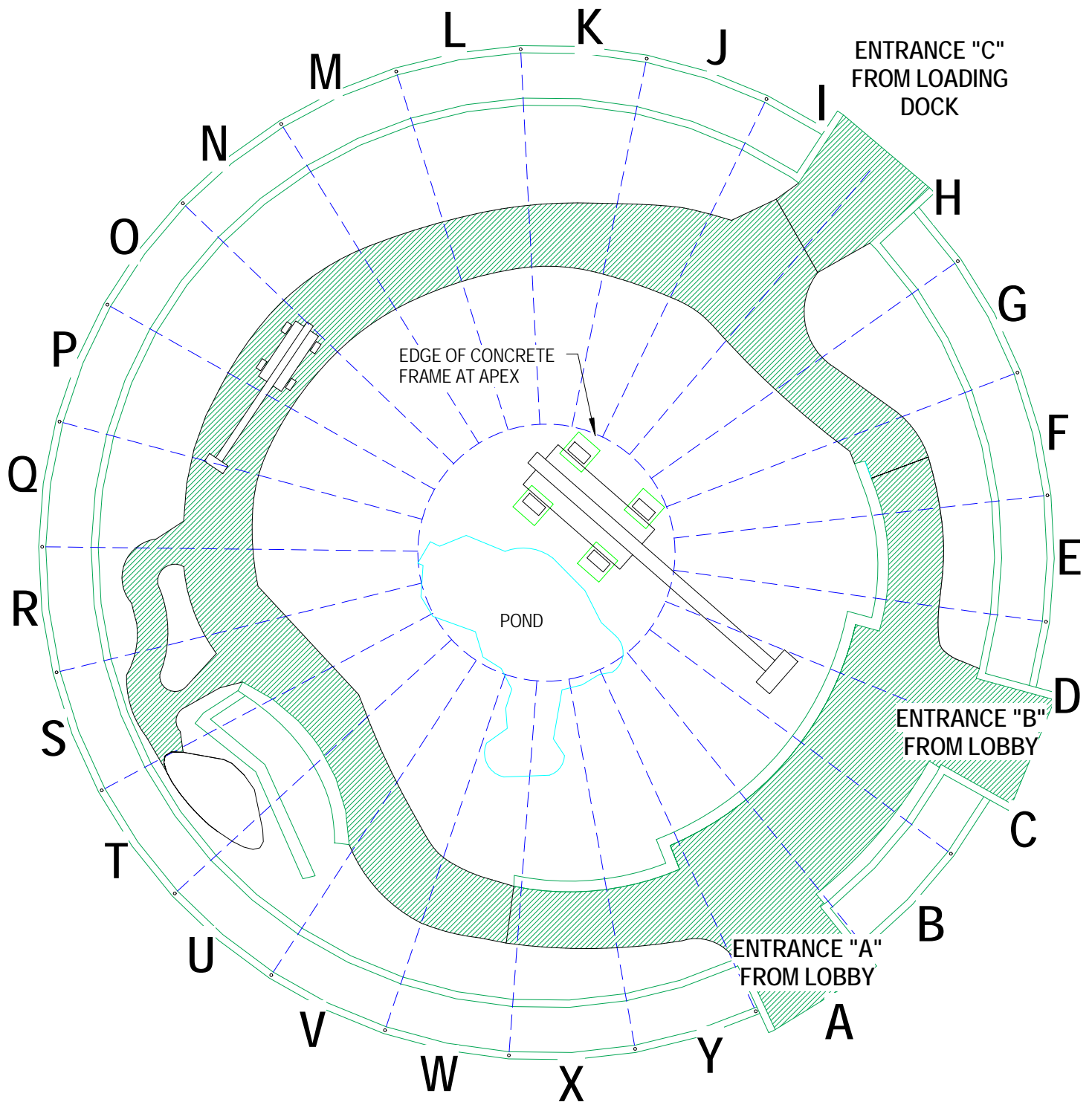
PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: DESERT DOME SECTOR Y FIELD NOTES

D125

D54



SHOW DOME INSPECTION NOTES



ALL LIFT POSITIONS WERE ACCESSED FROM ENTRANCE C.



PROJECT NUMBER: 2013-0167.04
DATE: 07-28-2014
SCALE: 1" = 20'-0"

PROJECT TITLE: MITCHELL PARK
HORTICULTURAL
CONSERVATORY
SHEET TITLE:

CONCRETE FRAME
EVALUATIONS & REPAIRS

SD

D55

Show Dome - Concrete Frame Evaluation Summary

Segment	Total Number of Hubs	Number of Hubs Reviewed	Number of Hubs Inaccessible at Base	Number of Locations with Spalled Concrete	Number of Locations with Spalled Grout	Number of Locations with Exposed Rebar	Notes
A	61	60	1	19	3	0	
B	69	64	5	15	7	0	
C	68	65	3	27	2	0	
D	66	64	2	19	4	0	
E	68	64	4	18	0	0	
F	68	65	3	25	2	0	
G	68	65	3	20	0	0	
H	59	59	0	9	0	0	
I	63	62	1	10	2	0	
J	68	64	4	22	0	0	
K	68	64	4	30	1	0	
L	68	65	3	21	0	0	
M	68	65	3	24	0	0	
N	68	64	4	20	0	0	
O	68	64	4	16	1	0	
P	68	64	4	18	5	0	
Q	68	65	3	30	1	1	
R	68	65	3	14	3	1	
S	68	64	4	16	3	0	
T	68	65	3	18	2	0	
U	68	65	3	19	4	0	
V	68	65	3	19	3	0	
W	68	65	3	34	0	0	
X	68	64	4	13	2	0	
Y	68	65	3	24	5	0	
Totals	1678	1601	77	500	50	2	
		95.4% of Total	4.6% of Total	31.2% of Total Reviewed	3.1% of Total Reviewed	0.1% of Total Reviewed	

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- IN 3: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- IN 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED
- NOTE D: PREVIOUS CLAMP REPAIR; SURFACE RUST ON PLATES.
- NOTE E: DELAMINATED SURFACE GROUT KNOCKED OFF; NO ADDITIONAL REPAIR SPECIFIED.

1 SECTOR A

NTS

SHOW DOME

GRÄEF

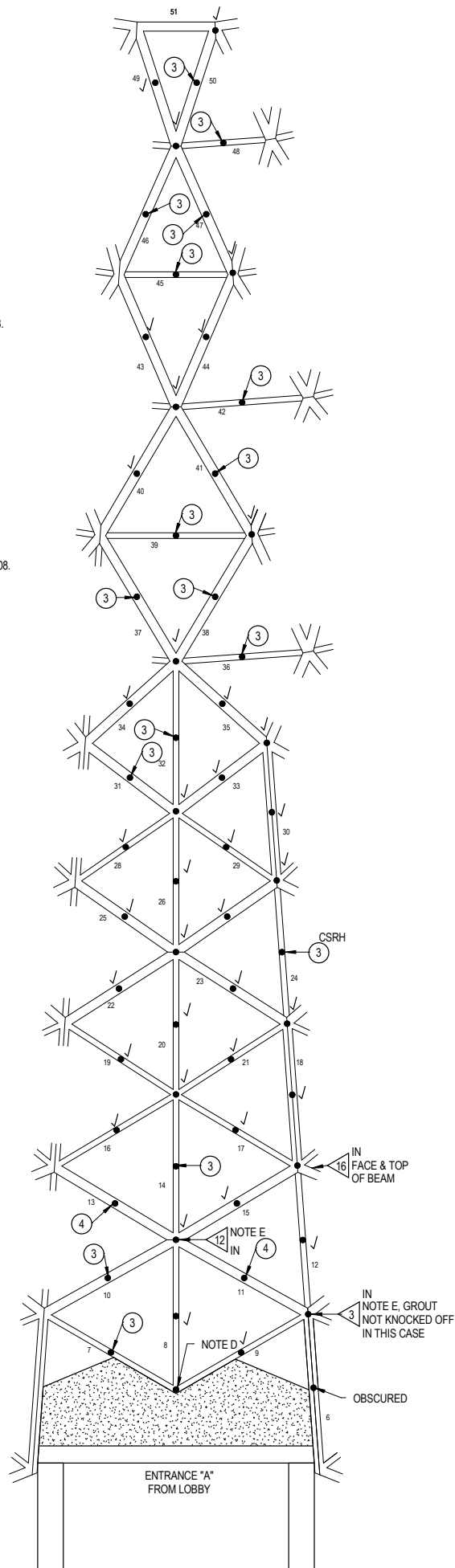
PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: SHOW DOME SECTOR A FIELD NOTES

SD101

D57



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- 3^{IN}: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- 4^{IN}: CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED
- NOTE D: GROUT SOUNDS SOFT ON SURFACE, BUT COULD NOT BE CHISELED / LOOSENED FOR REPAIR.
- NOTE E: DELAMINATED SURFACE GROUT KNOCKED LOOSE; NO ADDITIONAL REPAIR SPECIFIED.

SECTOR B

NTS

SHOW DOME

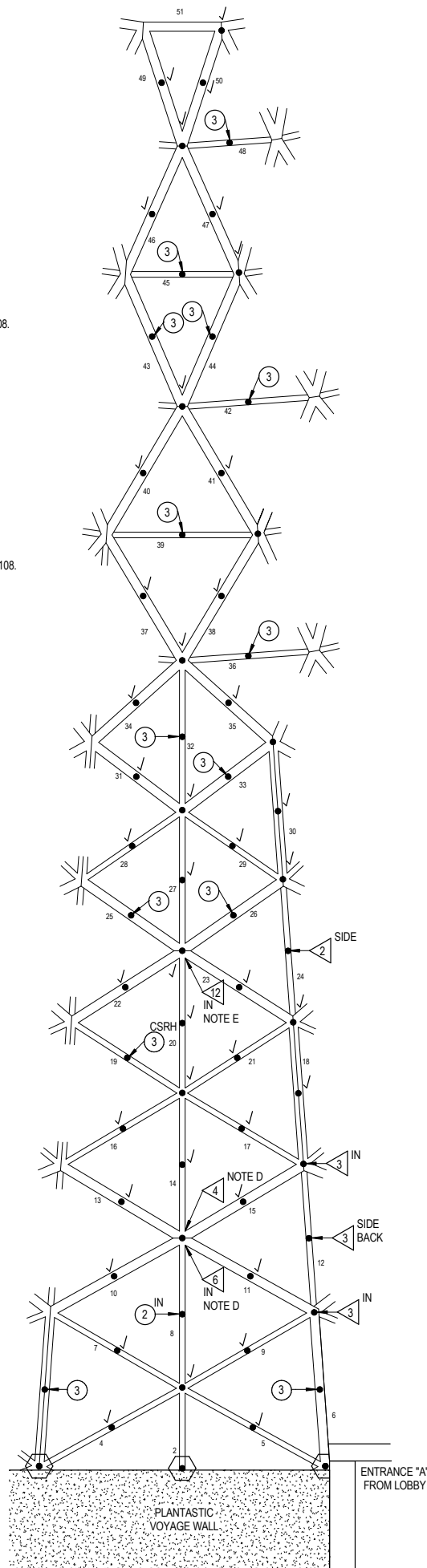
GRÄEF

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR B FIELD NOTES

SD102

D58



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- E: EXISTING CONDITION.
- 12: CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- 3^{IN}: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- 4^{IN}: CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED
- NOTE D: DELAMINATED SURFACE GROUT KNOCKED LOOSE; NO ADDITIONAL REPAIR SPECIFIED.

1 SECTOR C

NTS

SHOW DOME

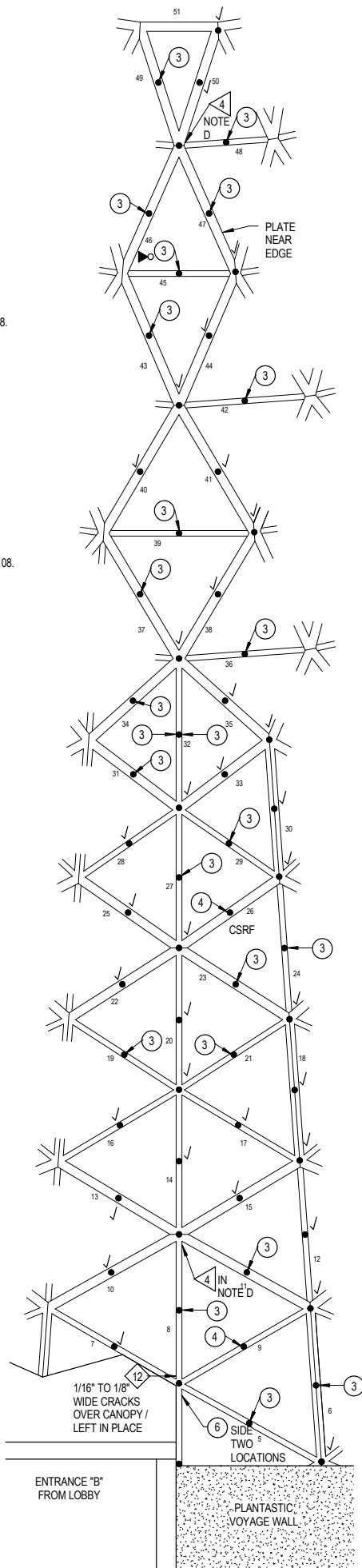
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PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR C FIELD NOTES

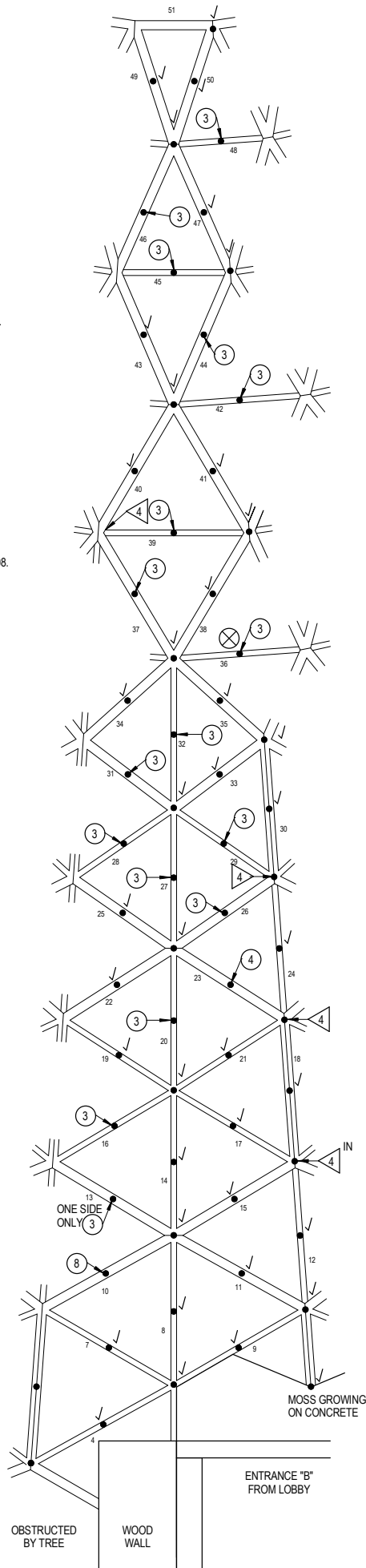
SD103

D59



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
- E EXISTING CONDITION.
- 12 CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
- 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
- IN 3 CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3 CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- IN 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗ OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED



1

SECTOR D

NTS

SHOW DOME

GRÄEF

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS


















PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: SHOW DOME SECTOR D FIELD NOTES

SD104

D60

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
-  GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
 - E EXISTING CONDITION.
 -  CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
 -  CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
 -  CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
 -  CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
 -  CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
 -  CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
 -  NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
 -  NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
 -  NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
 -  NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
 -  NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
 -  NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
 -  NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
 -  OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
 -  PAINT OUTSIDE FACE OF PLATE
 -  HOLE IN GLASS TO BE SEALED

1 SECTOR E

NTS

SHOW DOME

GRÄEF

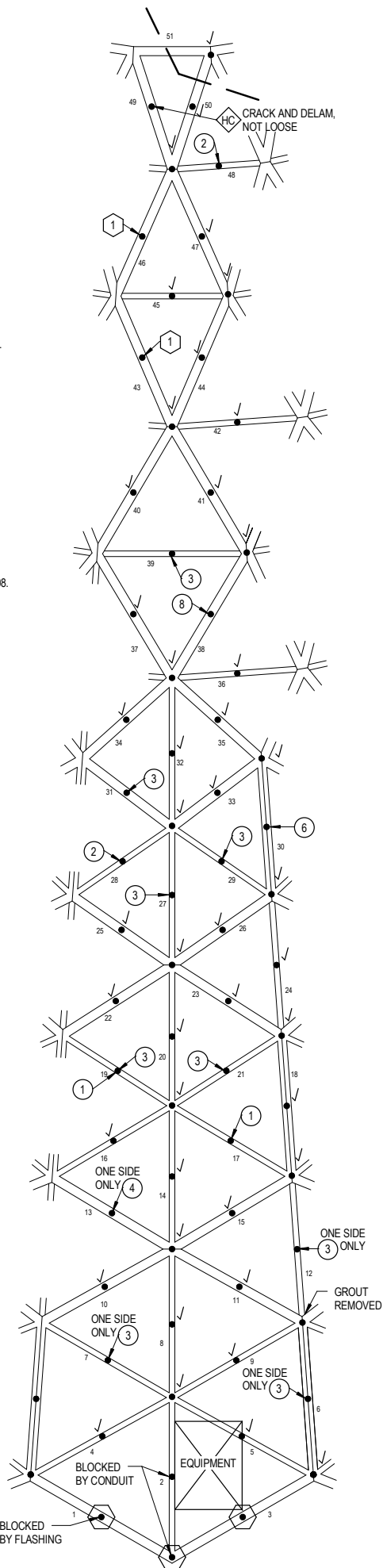
PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: SHOW DOME SECTOR E FIELD NOTES

SD105

D61



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
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- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- 4^{IN}: CONCRETE SPALL OR GROUT SPALL REMOVED ON INSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
- A: NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
- B: NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR F
NTS

1 SECTOR F
3/16" = 1'-0"

SHOW DOME

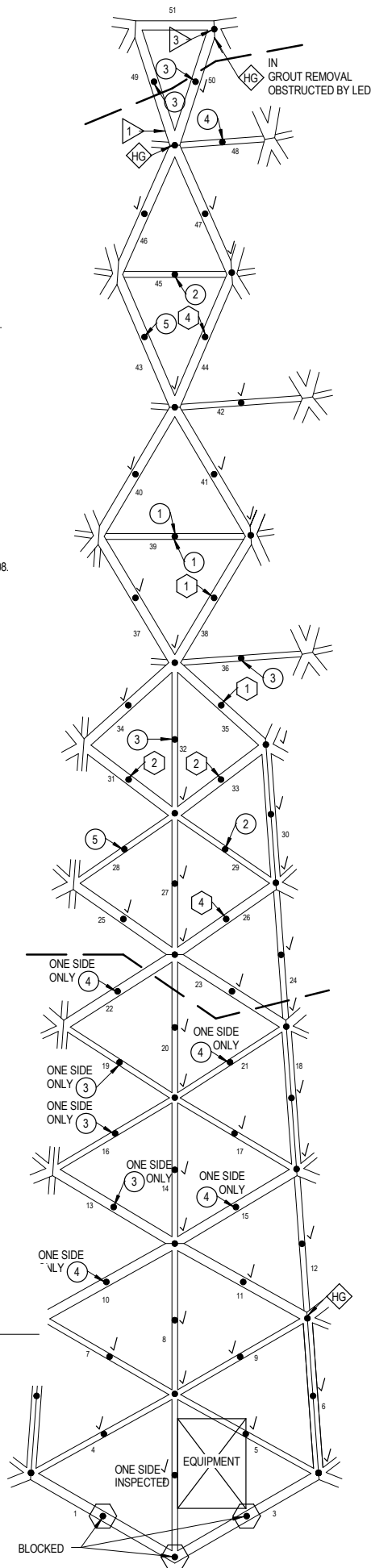
GRÄEF

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

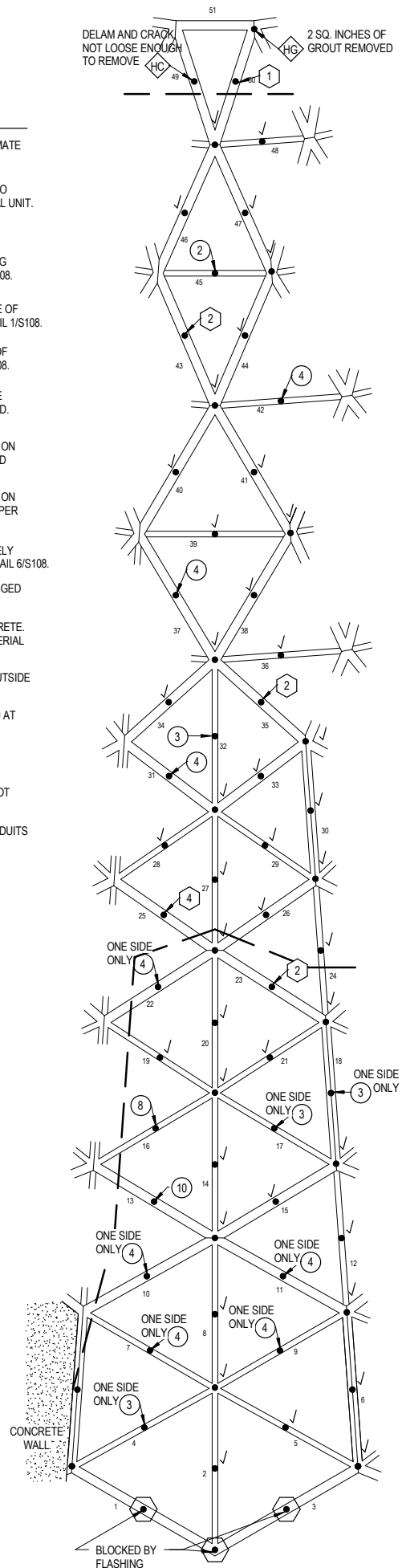
PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR F FIELD NOTES

SD106

D62



NOTE	NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
	GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
E	EXISTING CONDITION.
	CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.
	CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. STEEL PLATE TO BE PAINTED PER DETAIL 1/S108.
	CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
	CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
	CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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	NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
	NOTE B: CONCRETE EROSION DUE TO PROLONGED WATER DRIPPING. NO REPAIR REQUIRED.
	NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
	NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
	NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
	NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
	NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
	OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
★	PAINT OUTSIDE FACE OF PLATE
	HOLE IN GLASS TO BE SEALED



1 SECTOR G
NTS

NTS


SHOW DOME

NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.

 GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.

12 CONCRETE SPALL WITH EXPOSED REINFORCING STEEL. STEEL TO BE PAINTED PER DETAIL 3/S108.

IN
3 CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.

 CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.

 NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.

NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.

NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.

NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.

* PAINT OUTSIDE FACE OF PLATE

◀ HOLE IN GLASS TO BE SEALED




















NTS

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

SHEET TITLE: SHOW DOME SECTOR H FIELD NOTES

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
-  GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
 - E EXISTING CONDITION.
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 -  NOTE A: GLAZING HUB WELD PLATE COMPLETELY DISCONNECTED FROM BEAM. REPAIR PER DETAIL 6/S108.
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 -  NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
 -  NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
 -  NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
 -  NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
 -  NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
 -  OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
 -  PAINT OUTSIDE FACE OF PLATE
 -  HOLE IN GLASS TO BE SEALED

1 SECTOR I

NTS

SHOW DOME

GRÄEF

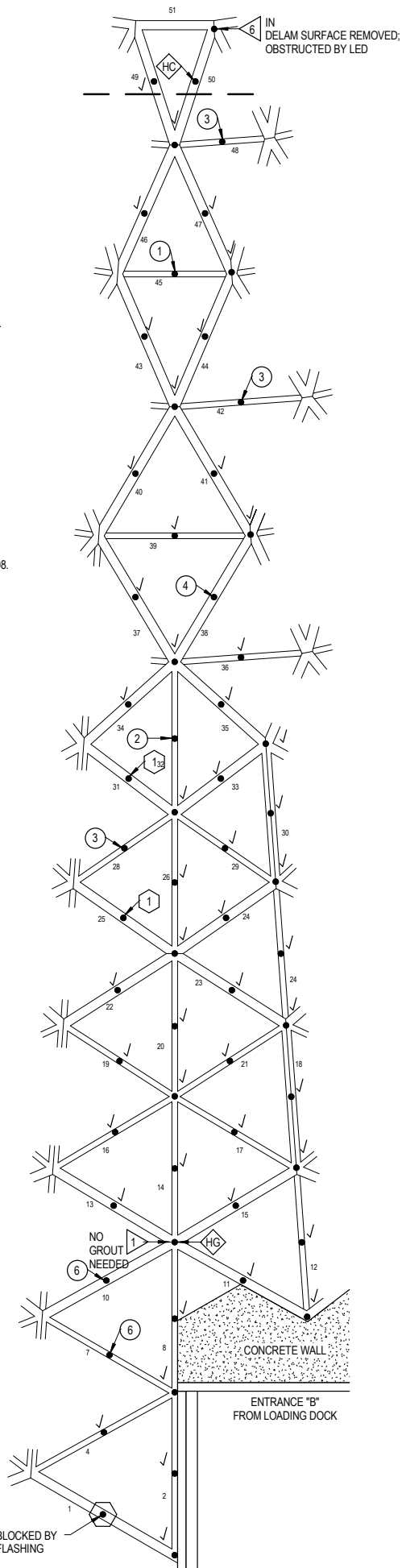
PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: SHOW DOME SECTOR I FIELD NOTES

SD109

D65



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- C: NOTE C: PIECE OF WOOD EMBEDDED IN CONCRETE. REMOVE WOOD AND FILL WITH PATCHING MATERIAL SIMILAR TO DETAIL 5/S108.
- WD: NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS: NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG: NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR J

NTS

SHOW DOME

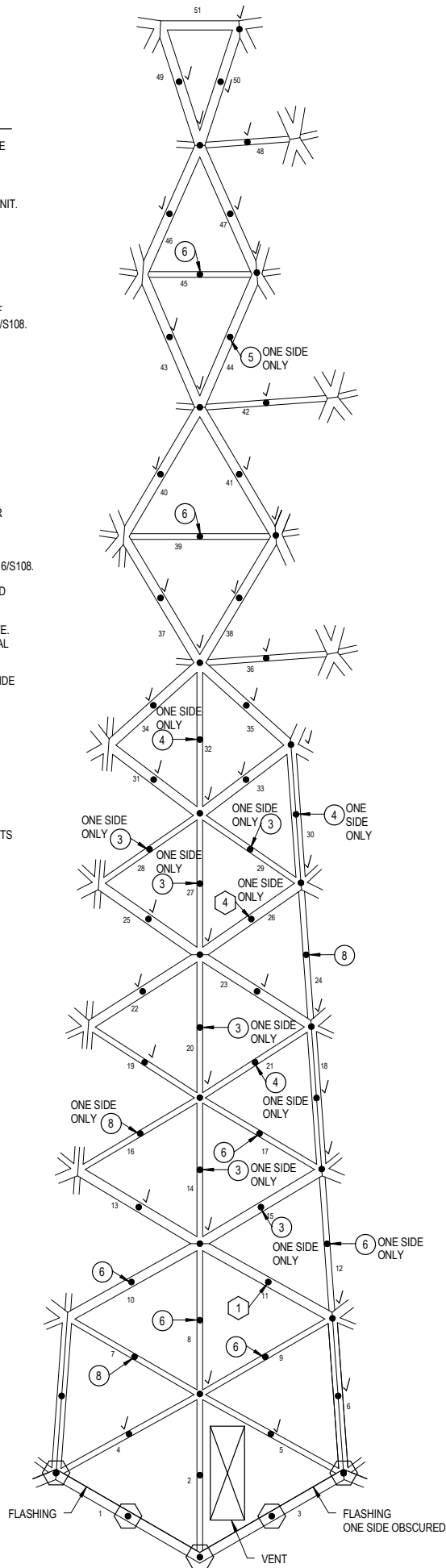
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PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR J FIELD NOTES

SD110

D66



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- IN 3: CONCRETE SPALL REMOVED ON INSIDE FACE OF BEAM. STEEL TO BE PAINTED PER DETAIL 1/S108.
- 3: CONCRETE SPALL REMOVED ON OUTSIDE FACE OF BEAM. EDGE OF STEEL PLATE NOT EXPOSED. NO PAINTING REQUIRED.
- 4: CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR K

NTS

SHOW DOME

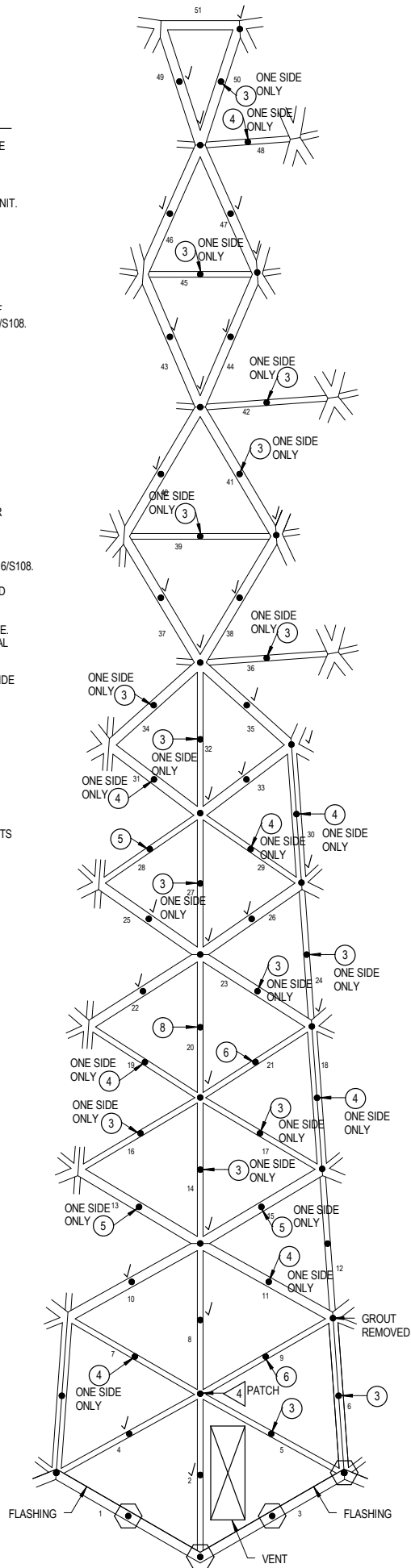
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PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR K FIELD NOTES

SD111

D67



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

1

SECTOR L

NTS

SHOW DOME

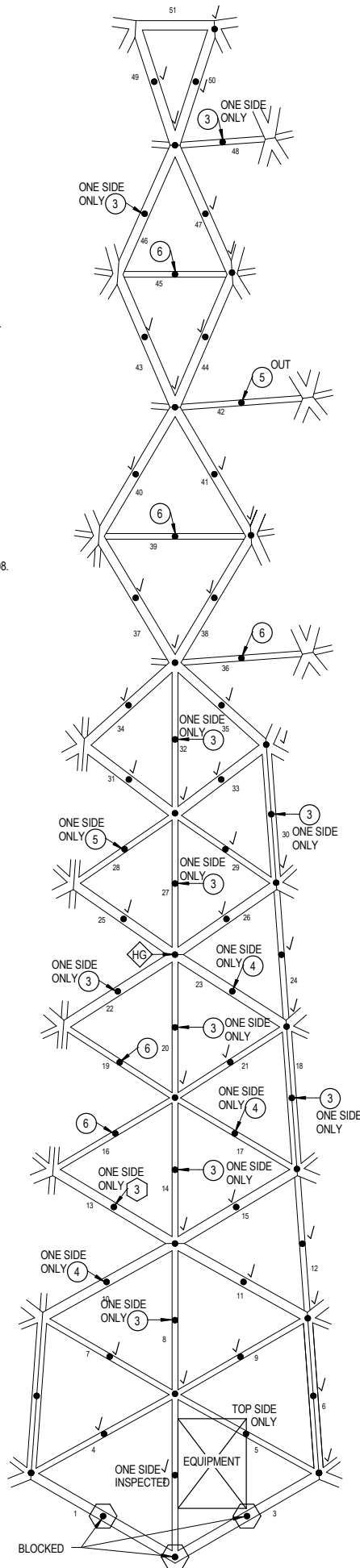
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PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
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SHEET TITLE: SHOW DOME SECTOR L FIELD NOTES

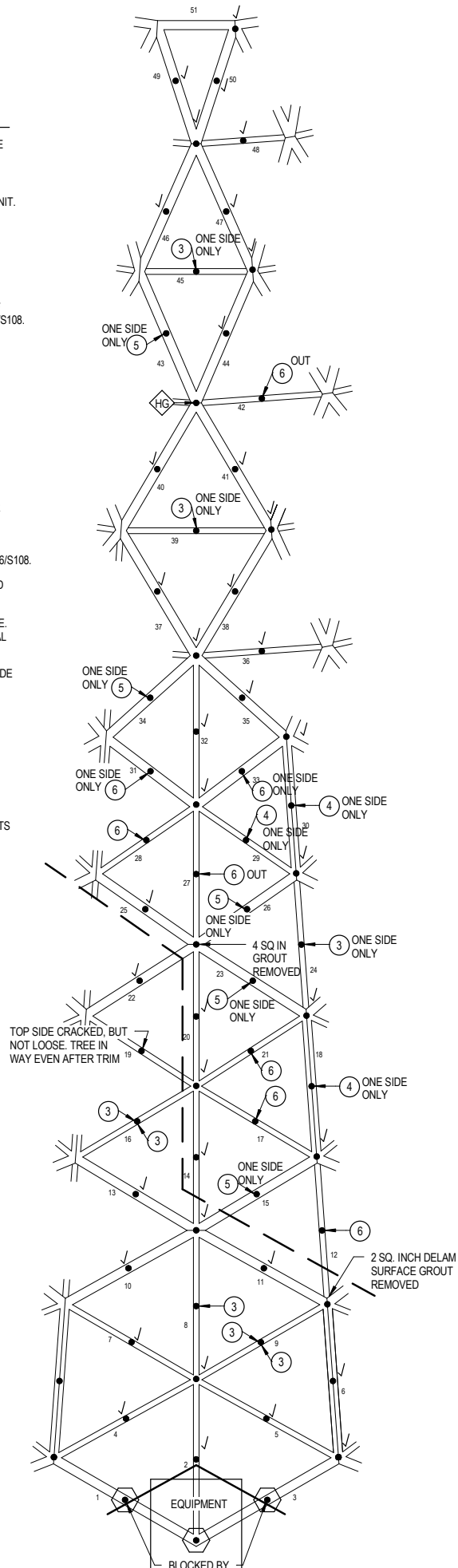
SD112

D68



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
- GLAZING HUB CONNECTION NOT VISIBLE DUE TO ALUMINUM COVER PLATE AND / OR MECHANICAL UNIT.
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- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗ OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED



1 SECTOR M

NTS

SHOW DOME

Gräef

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR M FIELD NOTES

SD113

D69

LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗ OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

1

SECTOR N

NTS

SHOW DOME

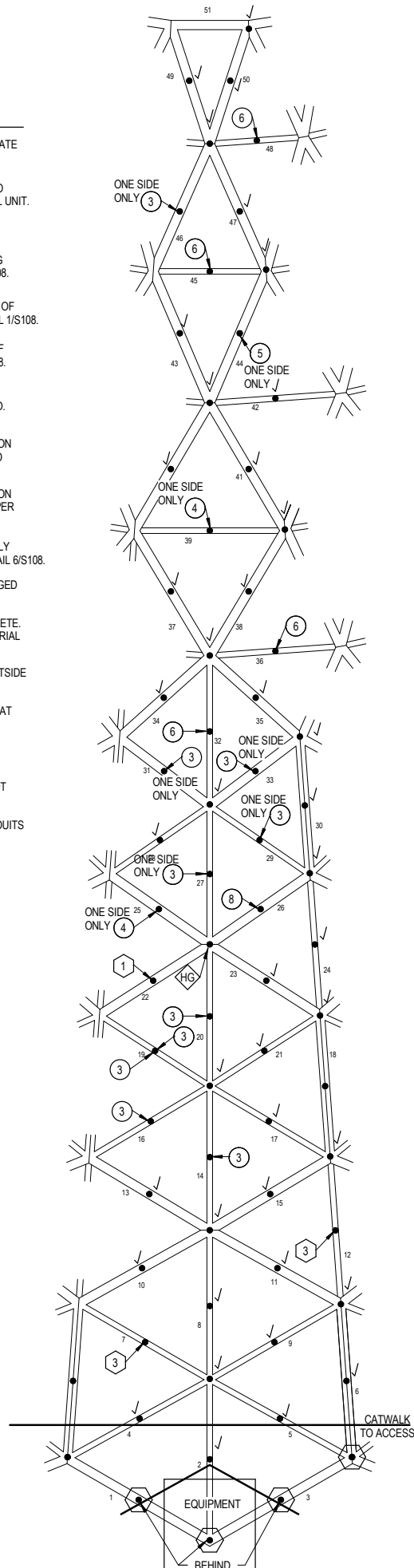
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PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR N FIELD NOTES

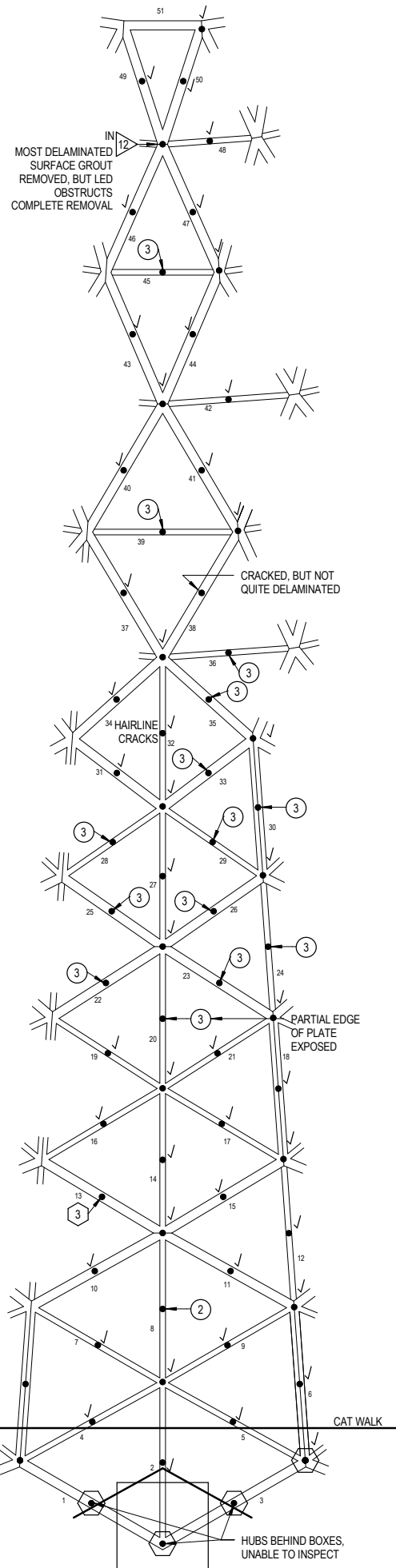
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D70



LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- ⊗ OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED



1 SECTOR O

NTS

SHOW DOME

GRÄEF

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

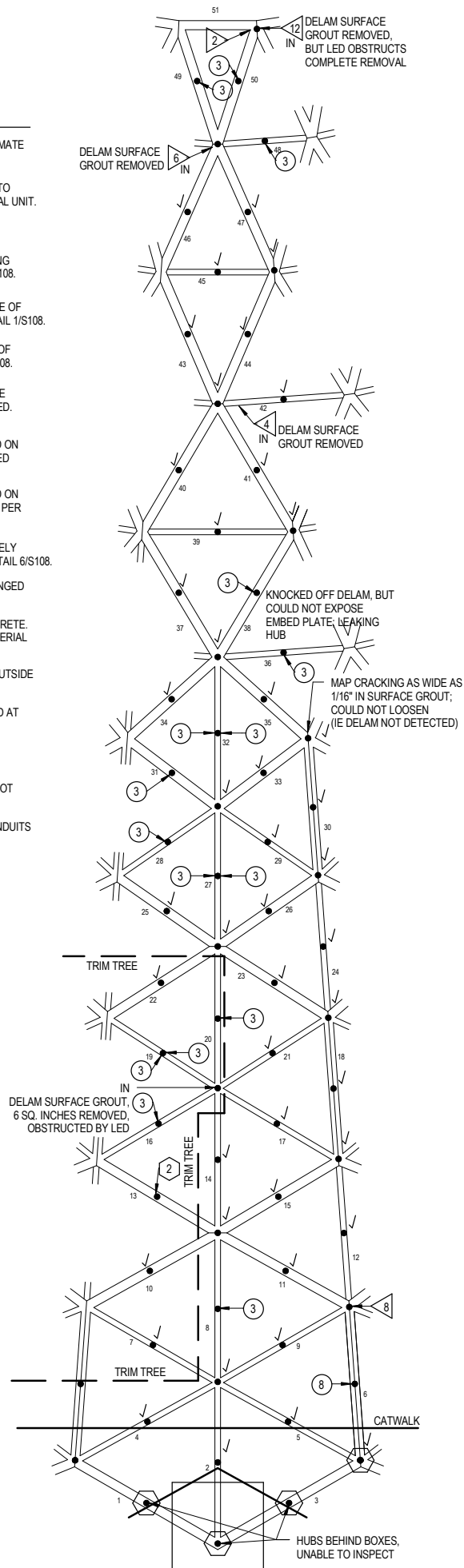
PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR O FIELD NOTES

SD115

D71

LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- HC: NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- ⊗: OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED



1

SECTOR P

NTS

SHOW DOME

GRÄEF

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR P FIELD NOTES

SD116

D72

LEGEND

- NOTE NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- 4 CONCRETE SPALL OR GROUT SPALL REMOVED ON OUTSIDE FACE OF BEAM. BEAM TO BE PATCHED PER DETAIL 2/S108, 4/S108 OR 5/S108.
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- WD NOTE WD: WATER DIVERTER INSTALLED ON OUTSIDE FACE OF BEAM.
- SS NOTE SS: STAINLESS STEEL CLAMP INSTALLED AT GLAZING HUB.
- HG NOTE HG: HOLLOW GROUT, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- HC NOTE HC: HOLLOW CONCRETE, NOT LOOSE, NOT REMOVED. NO PATCHING REQUIRED.
- OUTSIDE FACE OF BEAM OBSTRUCTED BY CONDUITS
- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED

SECTOR Q

NTS

SHOW DOME

GRÄEF

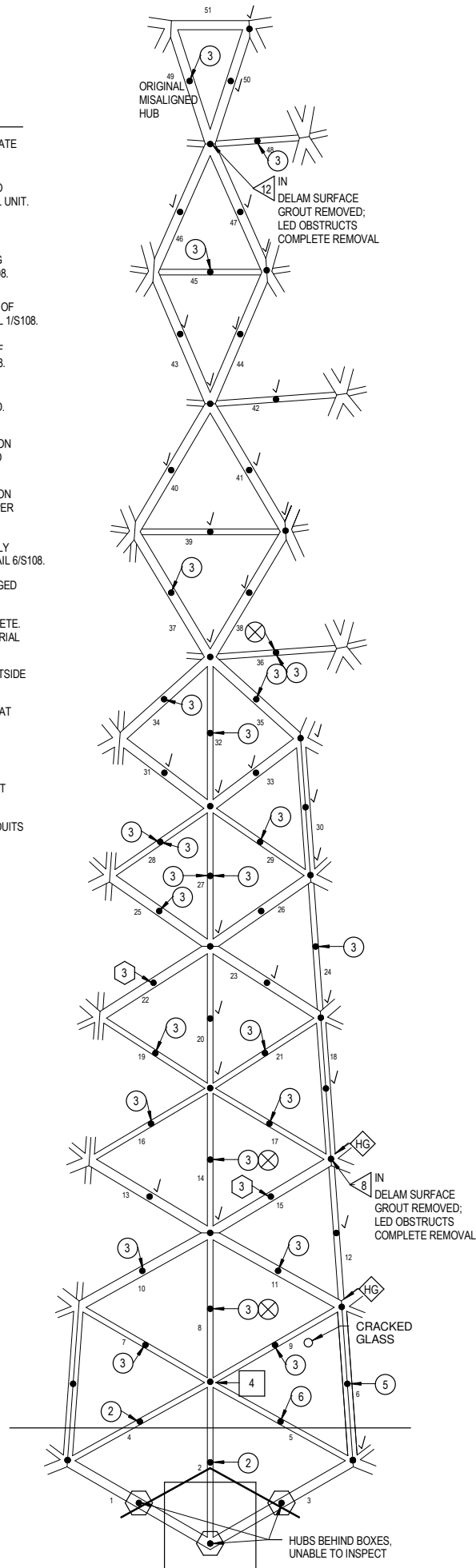
PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: SHOW DOME SECTOR Q FIELD NOTES

SD117

D73



LEGEND

- NOTE: NUMBER WITHIN SYMBOL INDICATES APPROXIMATE SIZE OF CONCRETE SPALL IN SQUARE INCHES.
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- *: PAINT OUTSIDE FACE OF PLATE
- ◀: HOLE IN GLASS TO BE SEALED

SECTOR R

NTS

SHOW DOME

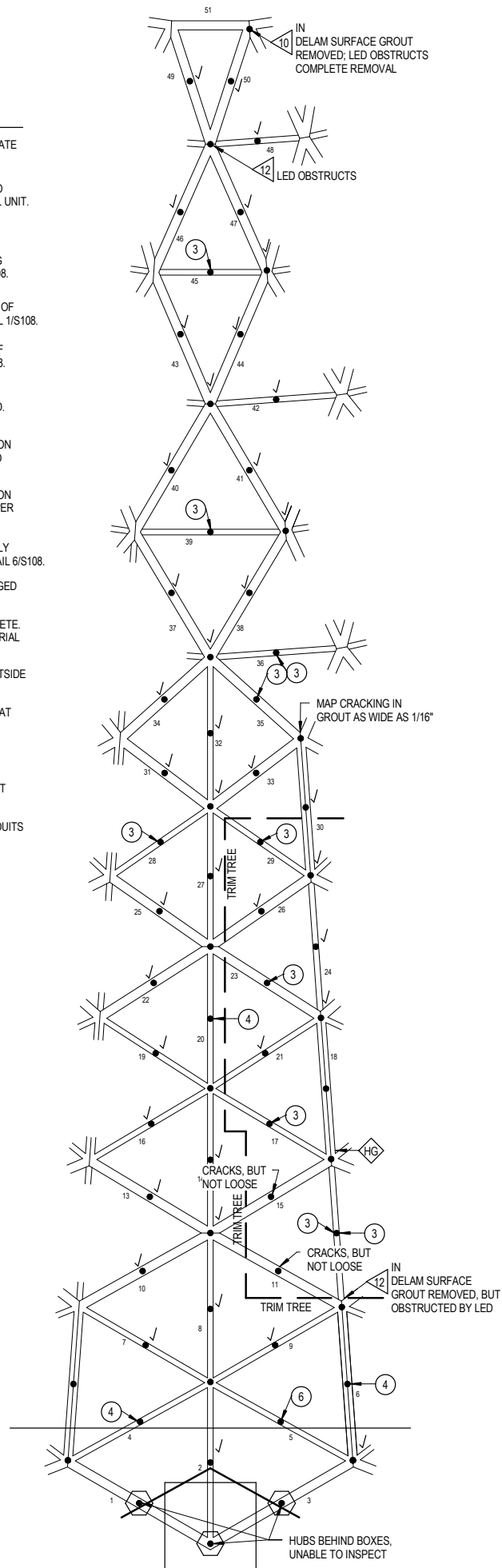
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PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR R FIELD NOTES

SD118

D74



LEGEND

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- ◀ HOLE IN GLASS TO BE SEALED

SECTOR S

NTS

SHOW DOME

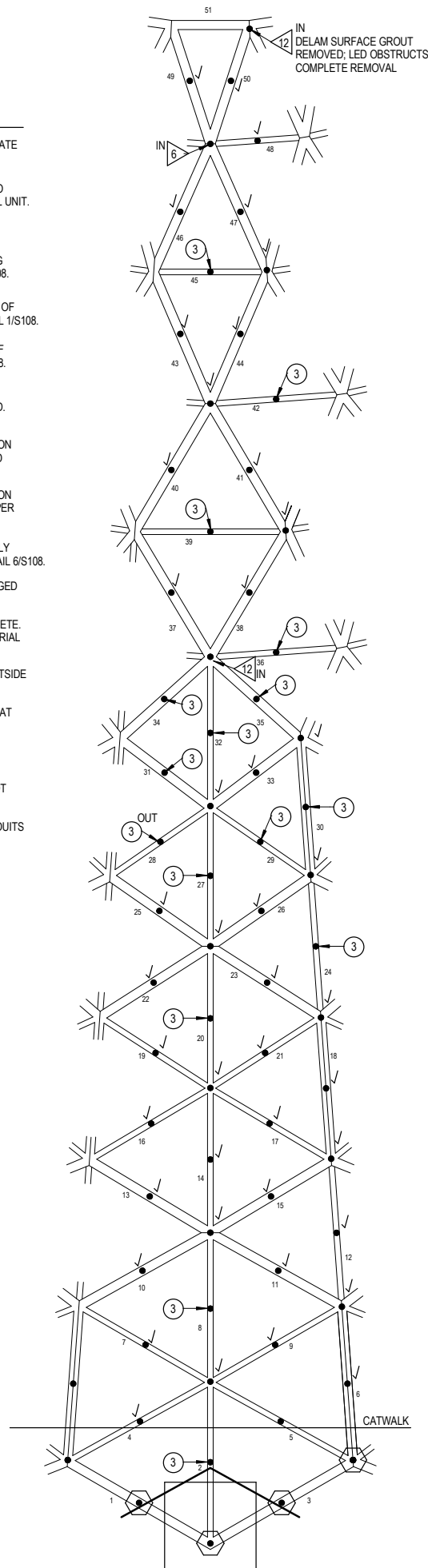
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PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR S FIELD NOTES

SD119

D75



LEGEND

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- ◀: HOLE IN GLASS TO BE SEALED

1

SECTOR T

NTS

SHOW DOME

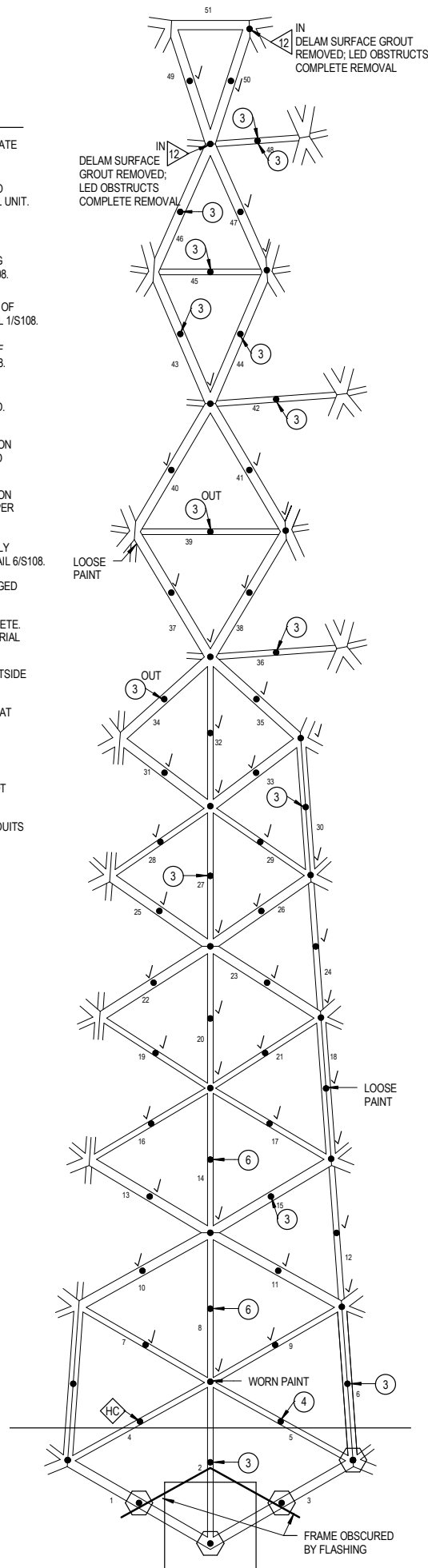
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PROJECT NUMBER: 2013-0167.04
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SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR T FIELD NOTES

SD120

D76



LEGEND

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- ◀: HOLE IN GLASS TO BE SEALED

1 SECTOR U

NTS

SHOW DOME

GRÄEF

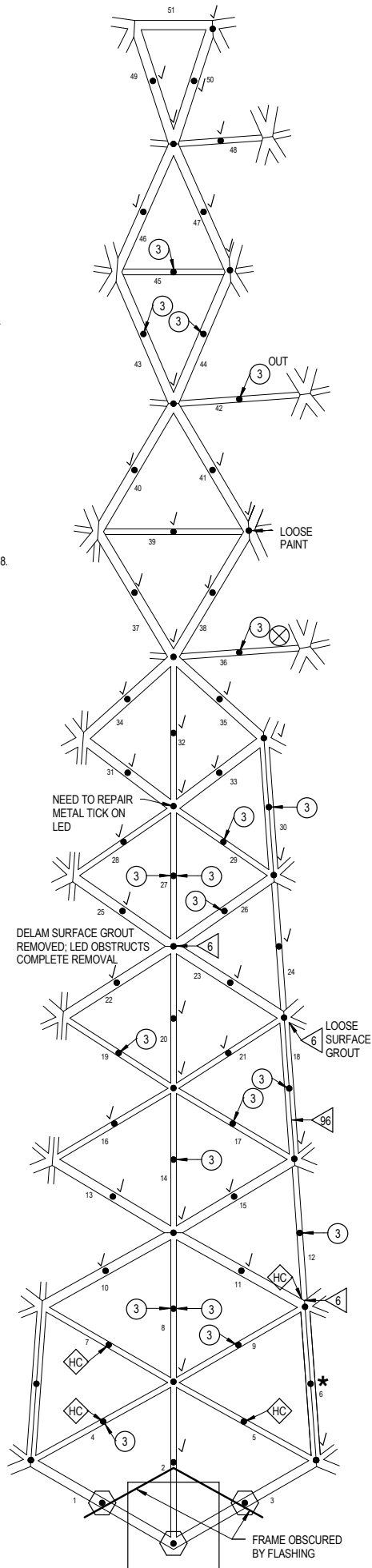
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DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS

SHEET TITLE: SHOW DOME SECTOR U FIELD NOTES

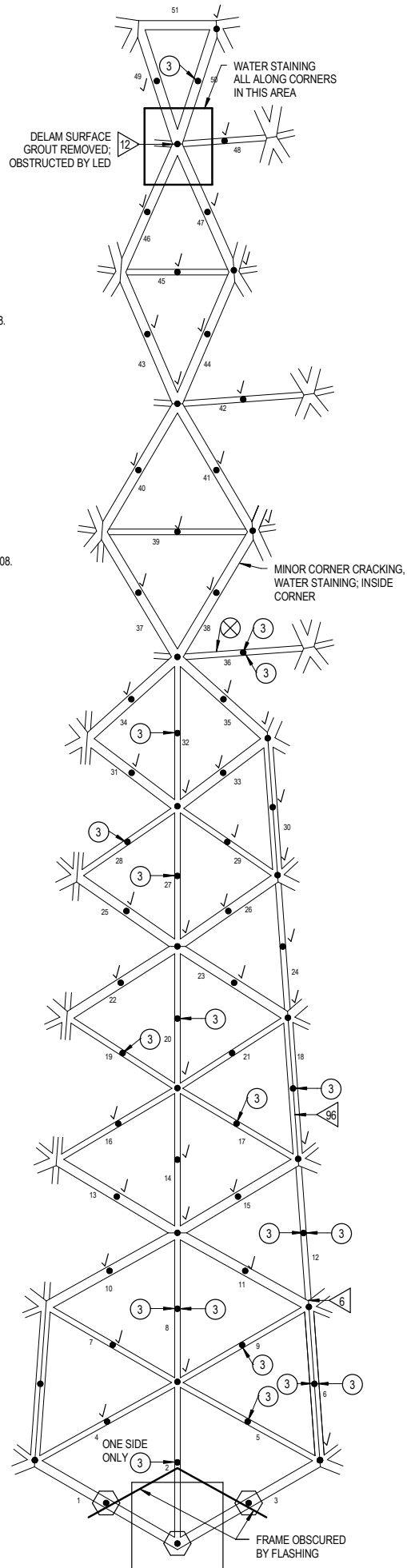
SD121

D77



LEGEND

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- * PAINT OUTSIDE FACE OF PLATE
- ◀ HOLE IN GLASS TO BE SEALED



1 SECTOR V

NTS

SHOW DOME

GRÄEF

PROJECT NUMBER: 2013-0167.04
DATE: 08-29-2014
SCALE: NTS

PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR V FIELD NOTES

SD122

D78

LEGEND

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1

SECTOR W

NTS

SHOW DOME

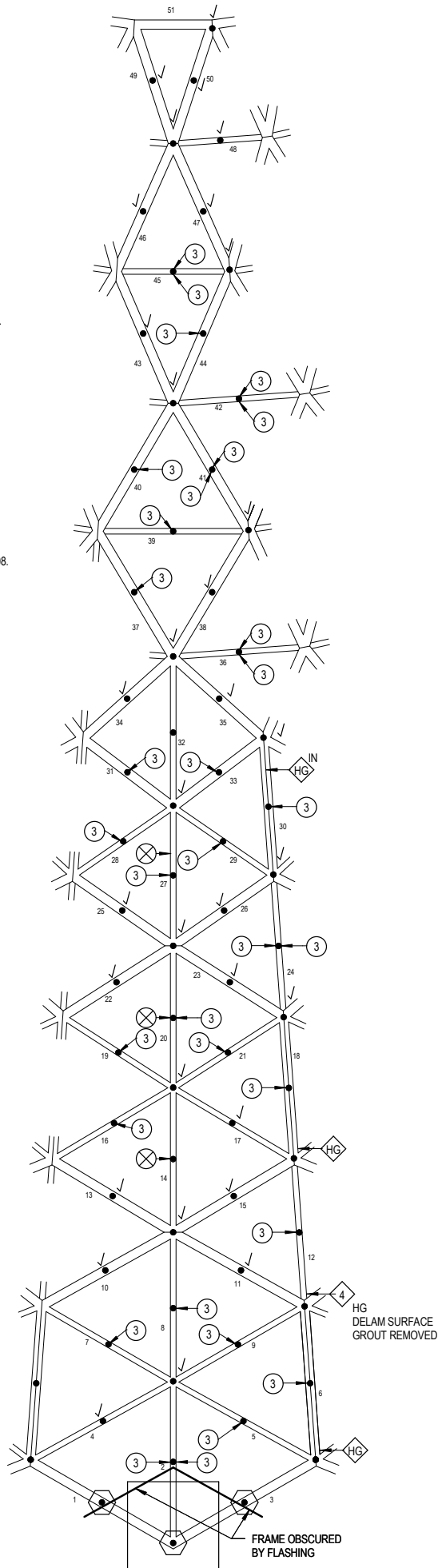
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PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
SHEET TITLE: SHOW DOME SECTOR W FIELD NOTES

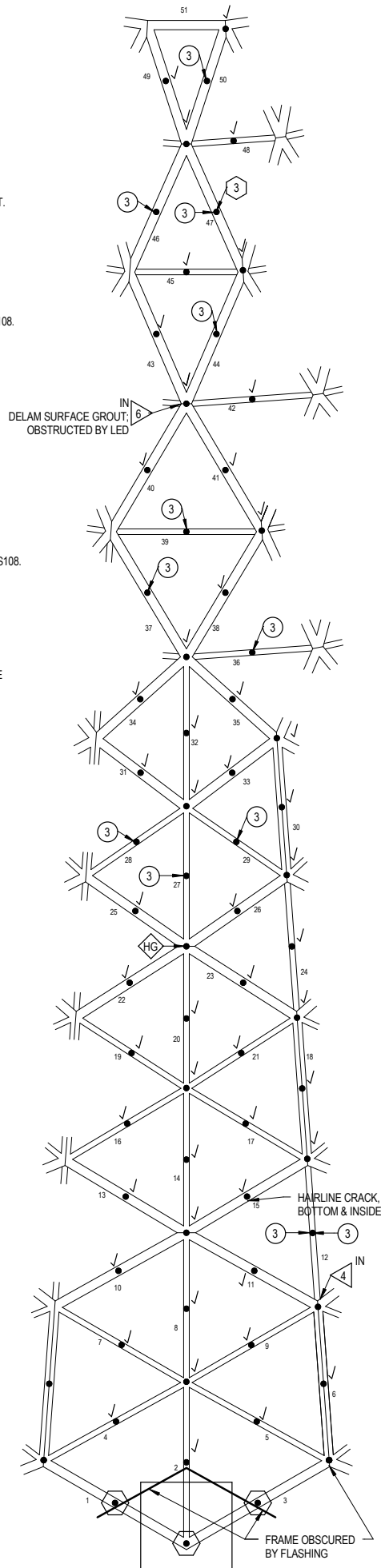
SD123

D79



LEGEND

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- * PAINT OUTSIDE FACE OF PLATE
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1 SECTOR X

NTS

SHOW DOME

GRÄEF

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DATE: 08-29-2014
SCALE: NTS

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SHEET TITLE: SHOW DOME SECTOR X FIELD NOTES

SD124

D80

LEGEND

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1 SECTOR Y

NTS

SHOW DOME

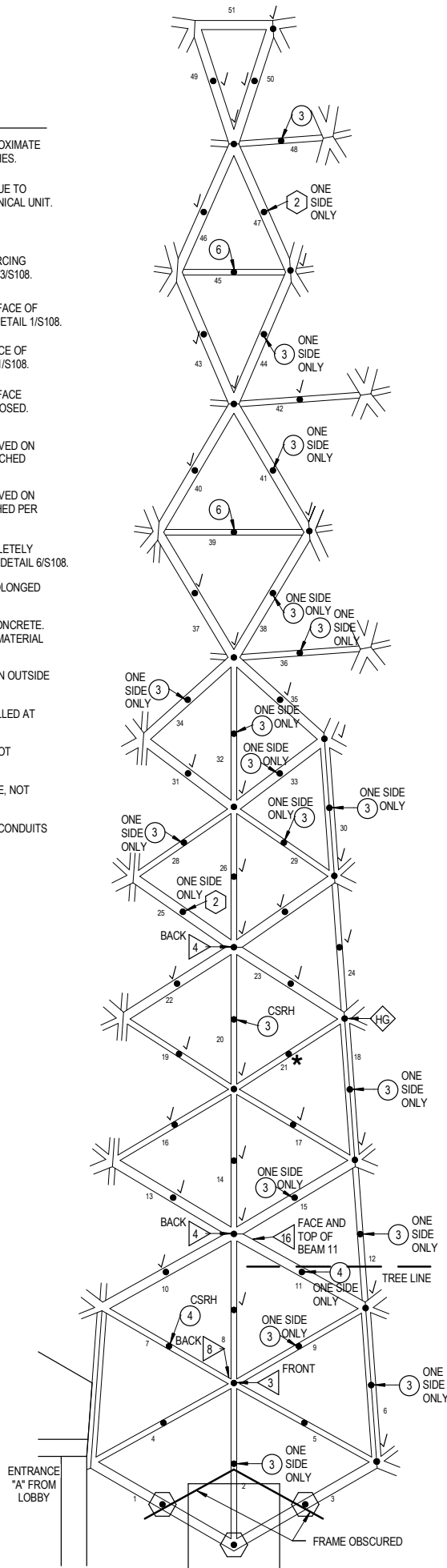
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PROJECT NUMBER: 2013-0167.04
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PROJECT TITLE: MITCHELL PARK DOMES - CONCRETE FRAME EVALUATION AND REPAIRS
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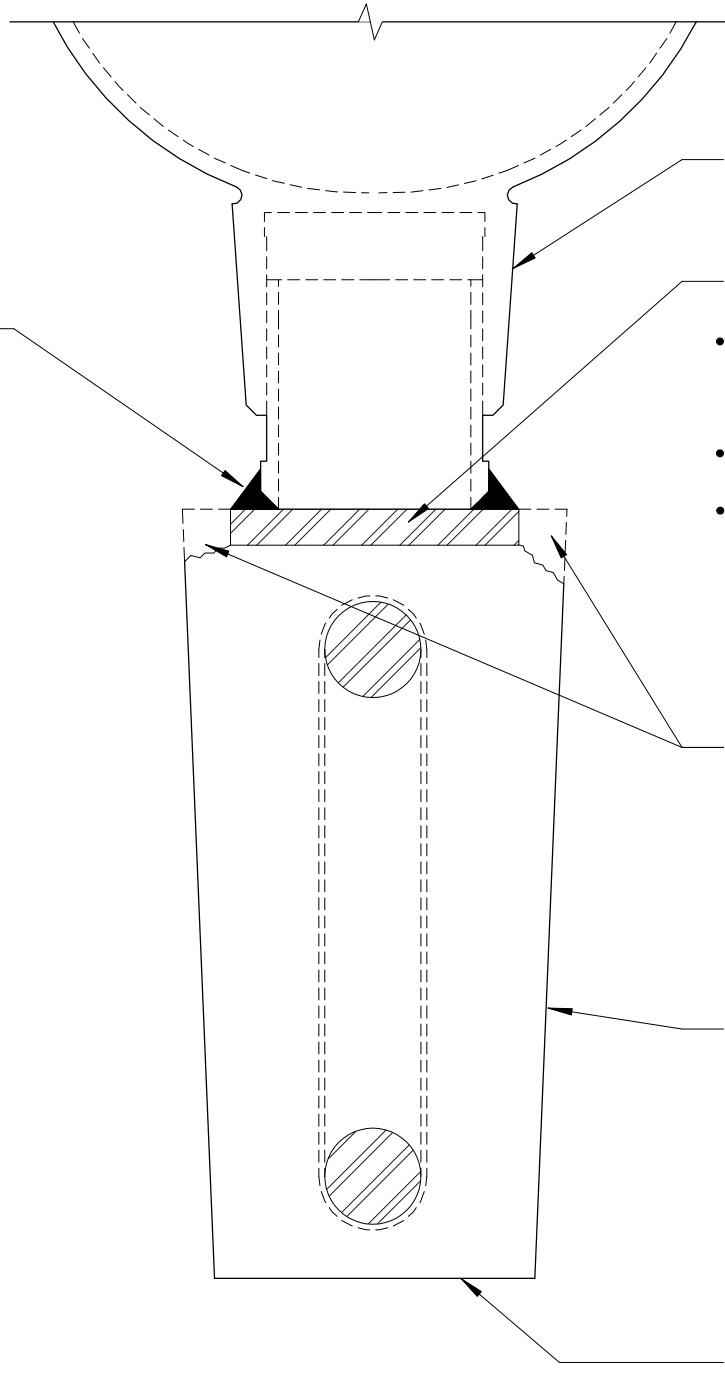
SD125

D81



Appendix E: REPAIR DETAILS

TYPICAL EXISTING
4-1" LONG WELDS
AND SEALANT
AROUND PERIMETER
OF GLAZING HUB.



EXISTING ALUMINUM AND
STAINLESS STEEL GLAZING
HUB CONNECTION.

TYPICAL EXISTING 3"x3"x3/8"
STEEL PLATE CAST INTO BEAM.

- REMOVE LOOSE PAINT AND
LOOSE SURFACE RUST WITH
POWERED ROTARY WIRE BRUSH
TO SSPC SPECIFICATION NO. SP3.
- REMOVE MOISTURE FROM ALL
SURFACES WITH HEATED AIR.
- PAINT EXPOSED FACE AND EDGES
OF STEEL PLATE WITH ZRC COLD
GALVANIZING COMPOUND TO
ACHIEVE A MINIMUM DRY FILM
THICKNESS OF 2.5 TO 3.5 MILS.

CONCRETE SPALLED AT PLATE -
ONE OR BOTH SIDES. NO PATCHING
REQUIRED.

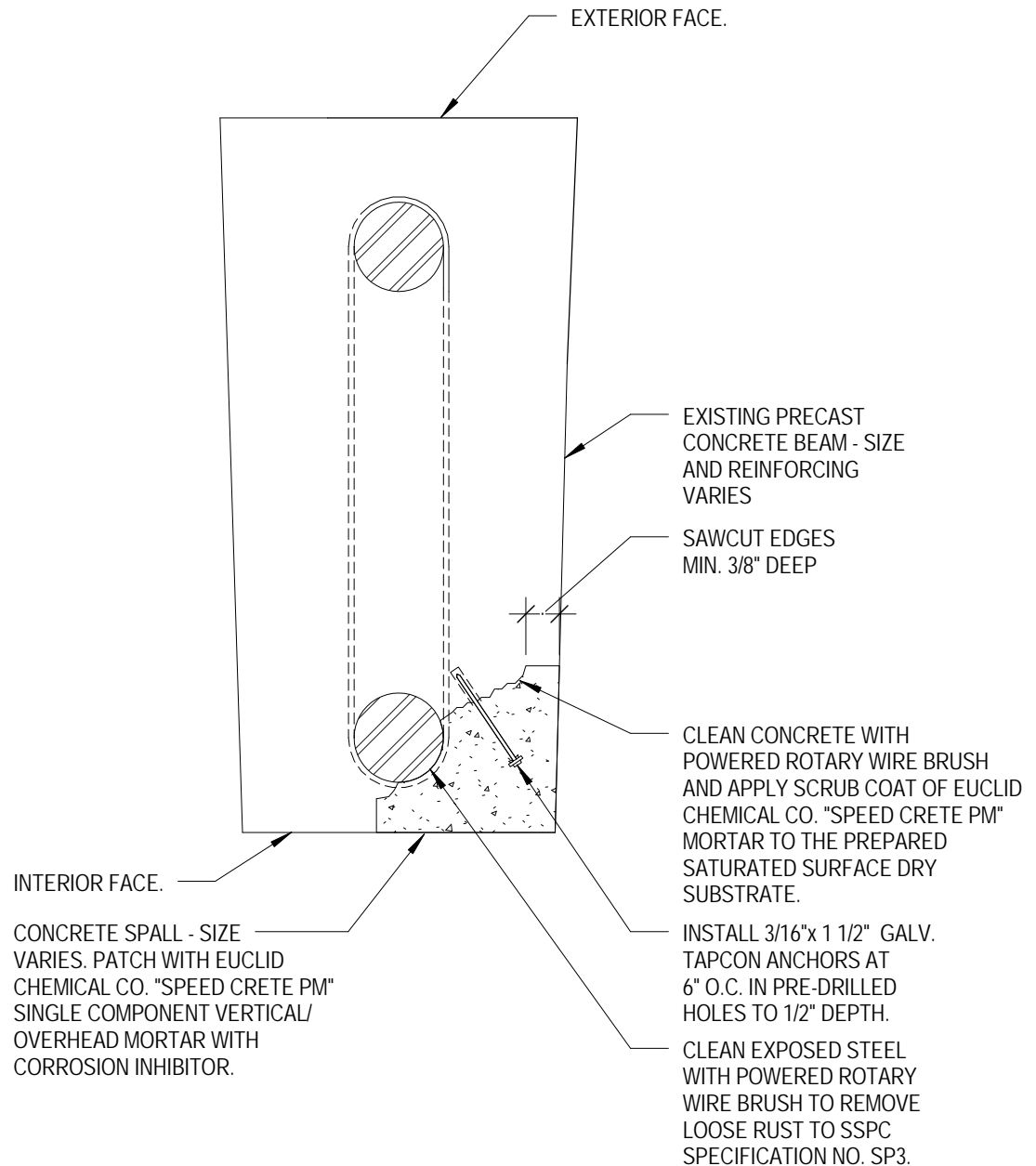
EXISTING PRECAST CONCRETE
BEAM - SIZE AND REINFORCING
VARIES.

INTERIOR FACE.

1

REPAIR SECTION AT GLAZING HUB

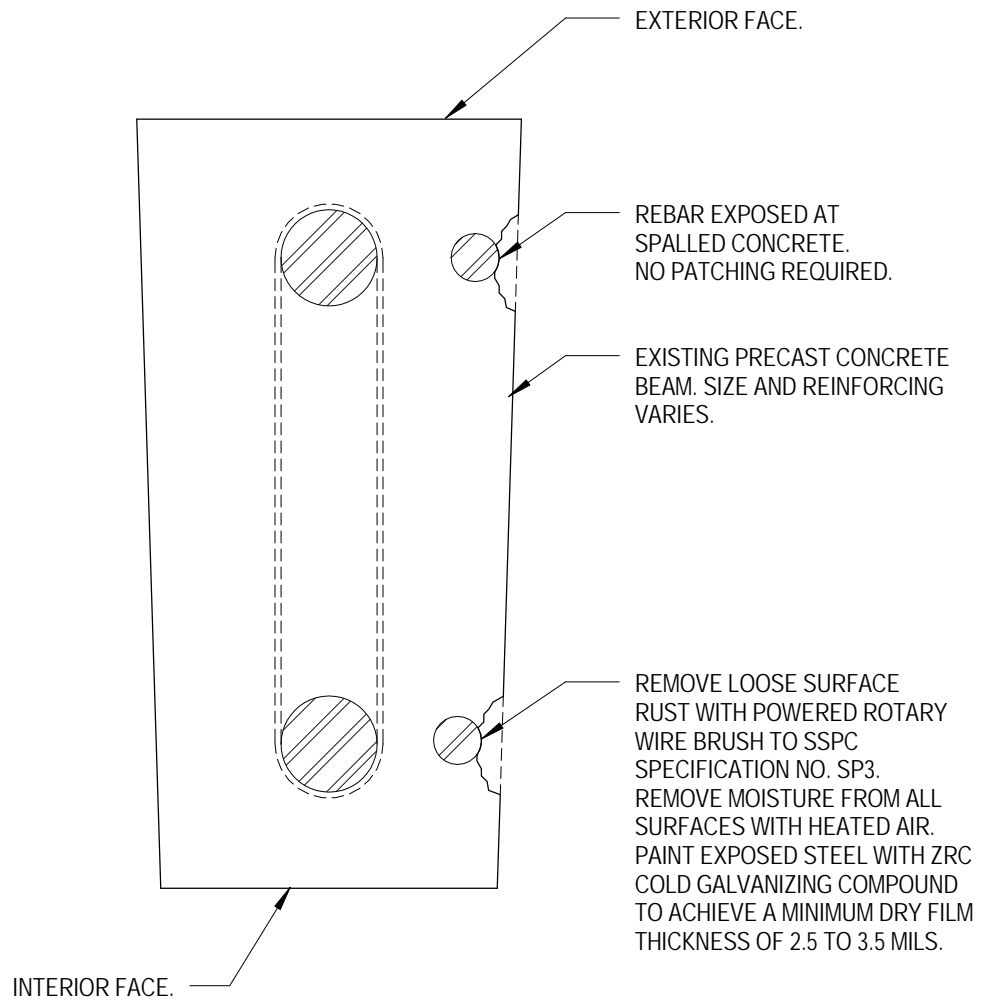
6" = 1'-0"



2

REPAIR SECTION AT DAMAGED BEAM

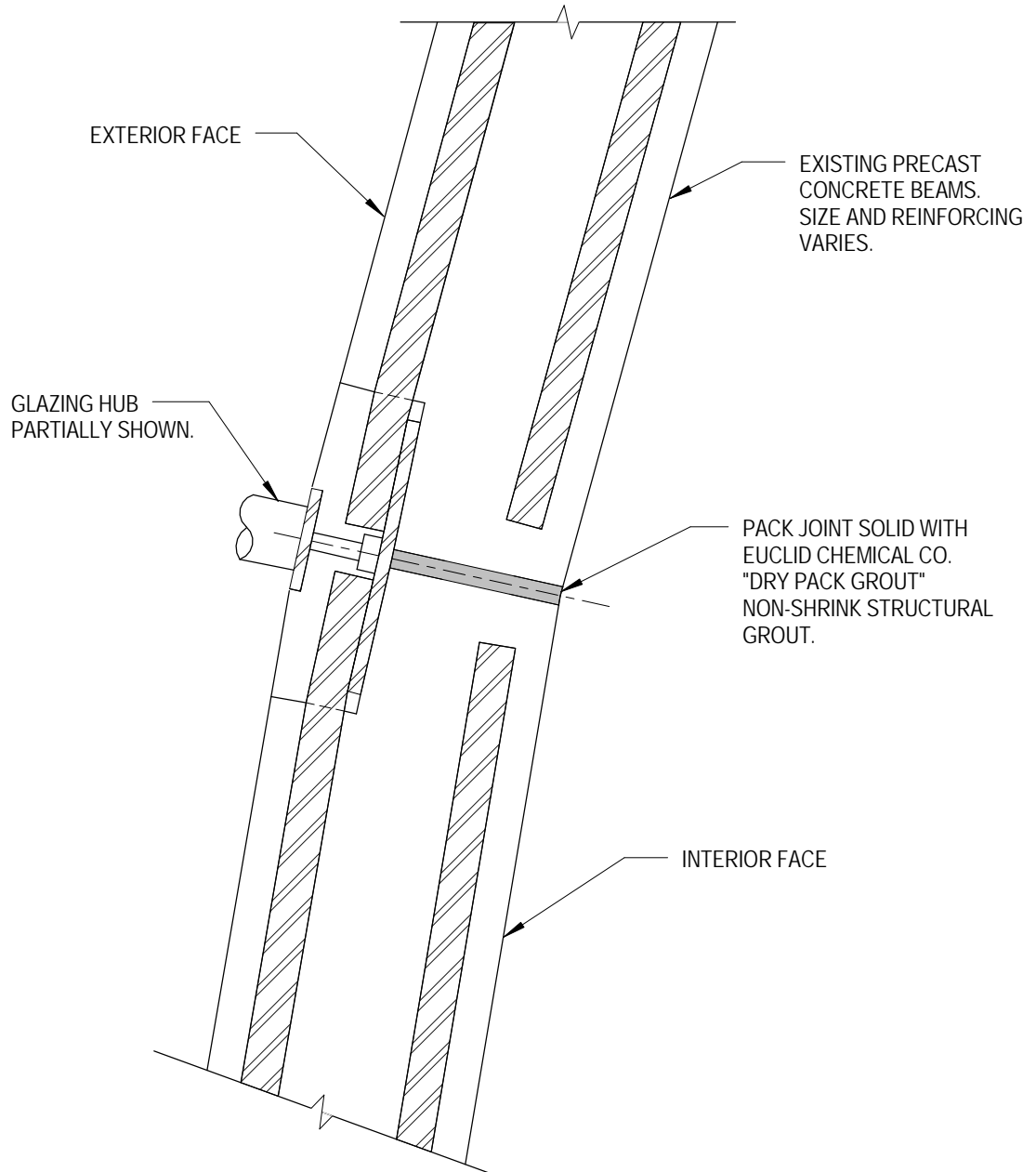
6" = 1'-0"



3

REPAIR SECTION AT EXPOSED REBAR

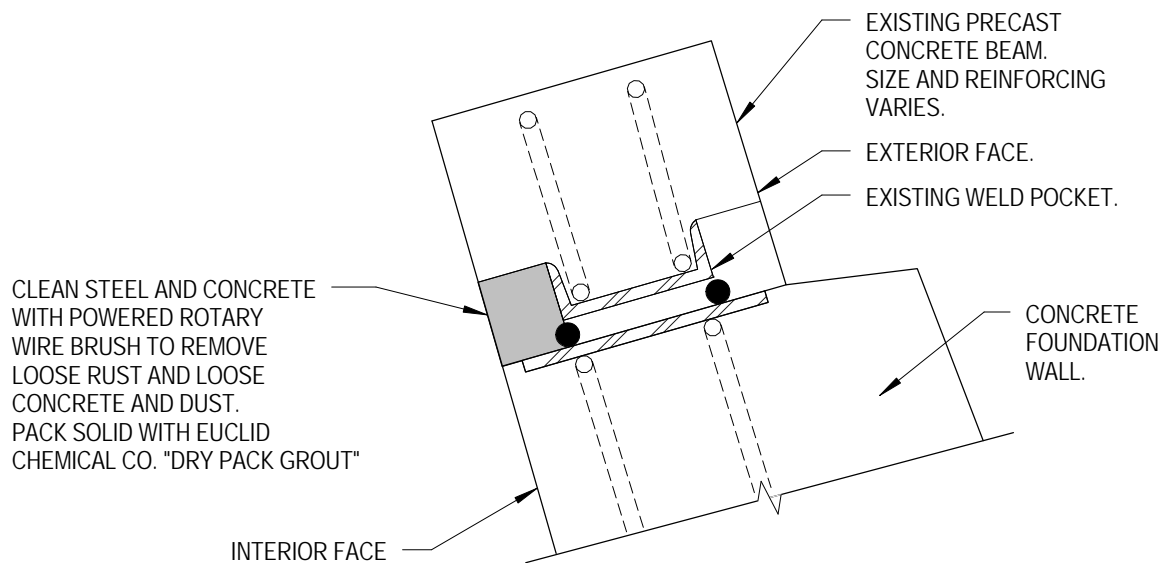
6" = 1'-0"



4

REPAIR SECTION AT BEAM INTERSECTION

3" = 1'-0"

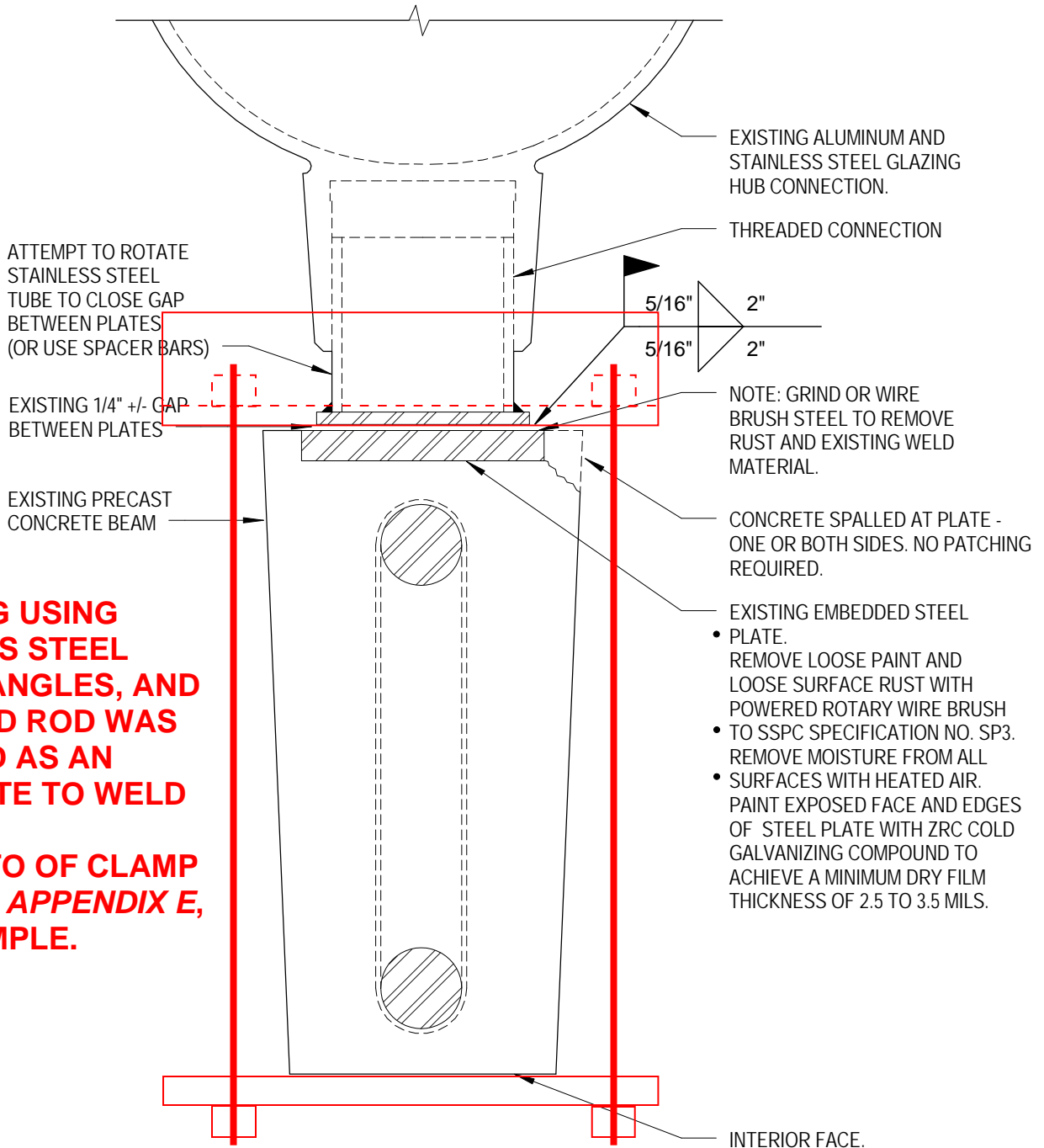


5

REPAIR SECTION AT FOUNDATION WALL

3" = 1'-0"

**CLAMPING USING
STAINLESS STEEL
PLATES, ANGLES, AND
THREADED ROD WAS
PROVIDED AS AN
ALTERNATE TO WELD
REPAIR
SEE PHOTO OF CLAMP
DETAIL IN APPENDIX E,
FOR EXAMPLE.**



6

REPAIR SECTION AT LOOSE GLAZING HUB

6" = 1'-0"

Appendix F: REPRESENTATIVE CONDITION PHOTOS

CONCRETE DETERIORATION AT EMBEDS

Photo F01: VISIBLE CONCRETE CRACKING AT CONNECTION OF GLAZING STANDOFF PIPE TO STRUCTURAL SPACE FRAME.



Photo F02: DELAMINATED CONCRETE WAS KNOCKED LOOSE. EXPOSED EDGES OF THE RUSTY STEEL PLATE WERE LATER PAINTED WITH GRAY ZINC-RICH SPRAY PAINT. REMOVING THE CONCRETE PICTURED IN THE PREVIOUS PHOTO ELIMINATES A POTENTIAL FALLING HAZARD.

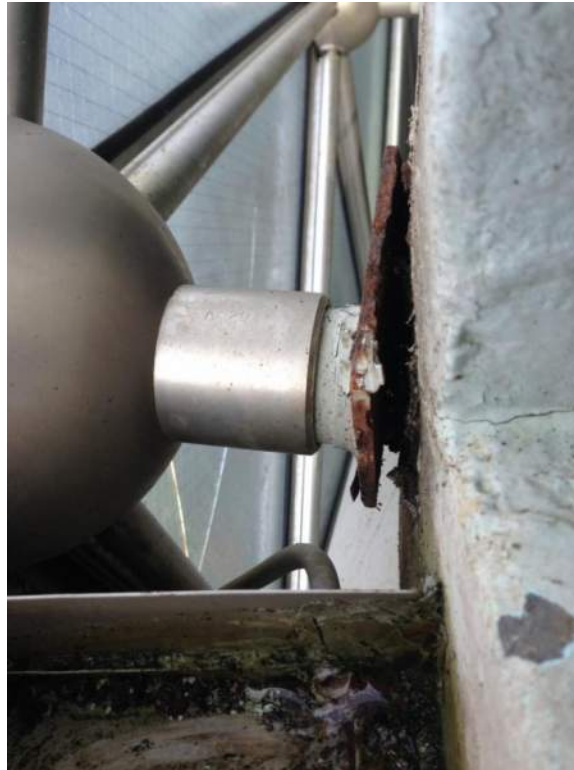
MISALIGNMENT BETWEEN GLAZING STANDOFF PIPE AND CONCRETE EMBED PLATE

Photo F03: MISALIGNED CONNECTION LEAVES GAP WHERE WELD CANNOT BE MADE ALONG THE BOTTOM EDGE OF PLATE.



Photo F04: STAINLESS STEEL CLAMPS PULL MISALIGNED CONNECTIONS TIGHT TO SUPPORTING REINFORCED CONCRETE STRUCTURE.

ERODED GROUT BETWEEN PRECAST UNITS

Photo F05: SOFT GROUT DETECTED AT JOINT BETWEEN PRECAST UNITS



Photo F06: REMOVAL OF GROUT MAKES ROOM FOR NEW GROUT REPAIR



Photo F07: REMOVAL OF GROUT MAKES ROOM FOR NEW GROUT REPAIR.
CONNECTION PLATE EXHIBITS SOME RUST.

SPALLED CONCRETE AND EXPOSED STEEL REINFORCEMENT



Photo F08: CONCRETE SPALL EXPOSES RUSTY STEEL REINFORCING BAR. NO
SECTION LOSS OF THE BAR WAS OBSERVED.

CORROSION OF APEX BOLTS

Photo F09: ALUMINUM FRAMING AT DOME APEX CONNECTS TO COMPRESSION RING OF REINFORCED CONCRETE SPACE FRAME DOME.



Photo F10: CORRODED ALUMINUM NUTS AND BOLTS, PRIOR TO REPLACEMENT WITH STAINLESS STEEL.

BROKEN GLASS

Photo F11: BROKEN GLASS LETS IN AIR AND MOISTURE.

WATER DIVERTER

Photo F12: WATER DIVERTER INSTALLED BELOW HUB.